August 5, 1957

PAPER TRADE JOURNAL

- Wood as a Raw Material for Groundwood Pulp
- West Virginia Installs Model Supercalender
- Automatic Nailer Makes Skids at Mechanicville
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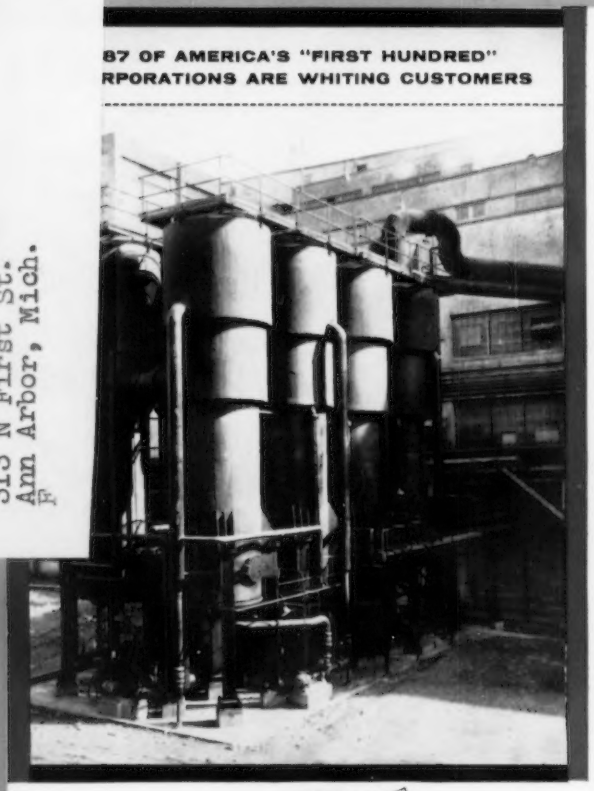

Crown Zellerbach Reduces Operating Costs with Swenson Evaporator System

Crown Zellerbach answers the need for greater operating economy with this modern septuple-effect system at their Camas, Washington, kraft pulp mill. It evaporates more water per pound of steam than the former unit and gives dependable, trouble-free service. This installation—like 90% of all such septuple-effect recovery systems—is Swenson-designed.

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"An Open Door" shows how efficient Swenson equipment opens the door to lower production costs. Write today. Swenson Evaporator Company, 15687 Lathrop Avenue, Harvey Illinois.

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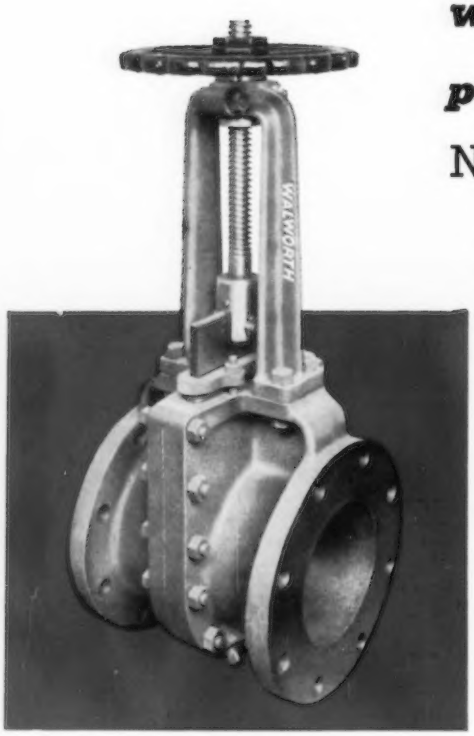
No. 757F sizes 4" to 16" inclusive

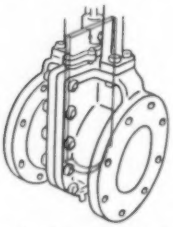


Clogproof operation makes this Walworth Gate Valve particularly suitable wherever pipelines transport pulp stock or other suspensions carrying solids or fibrous matter. There are no bonnet recesses or body obstructions to accumulate matter . . . circular ports permit full flow . . . semi-circular gate closes to a tight leakproof shutoff.

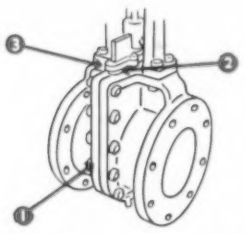
Suitable for a wide range of fluids and operating conditions, this unique valve design is available in All Bronze, Iron Body with Bronze Trim, Iron Body with Stainless Steel Trim, and All Stainless Steel construction. Handwheel, sliding-stem-and-lever, motor, and cylinder operation are available.

The complete Walworth line now includes valves and fittings for "across-the-board" use in pulp and paper mills. Gate, globe, angle, check and lubricated plug valves, as well as pipe fittings, in all conventional sizes and types. For additional technical data on the No. 757F — or any Walworth product — see your nearby Walworth Distributor or write:

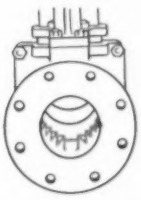
Check these features:



Semi-circular Shearing Gate... Sharpened, beveled edge of the gate shears through matter without touching inlet or outlet halves of the body. At point of closure a tight, leakproof shutoff occurs as the heel of the gate shearing edge wedges with a lug in the inlet half of the body. Ample gate length permits re-sharpening.



Bonnetless Design . . . 1) Two-piece body is bolted together and gasketed on a vertical centerline. 2) Stuffing box is an integral part of the body. 3) Packing and one-piece gland completely encompass gate.



Body Shearing Notches... Lower portion of the seat of the outlet half of the body is notched to better distribute the fibers of the pulp stock. This makes it easier for the gate to cut through fibrous material.

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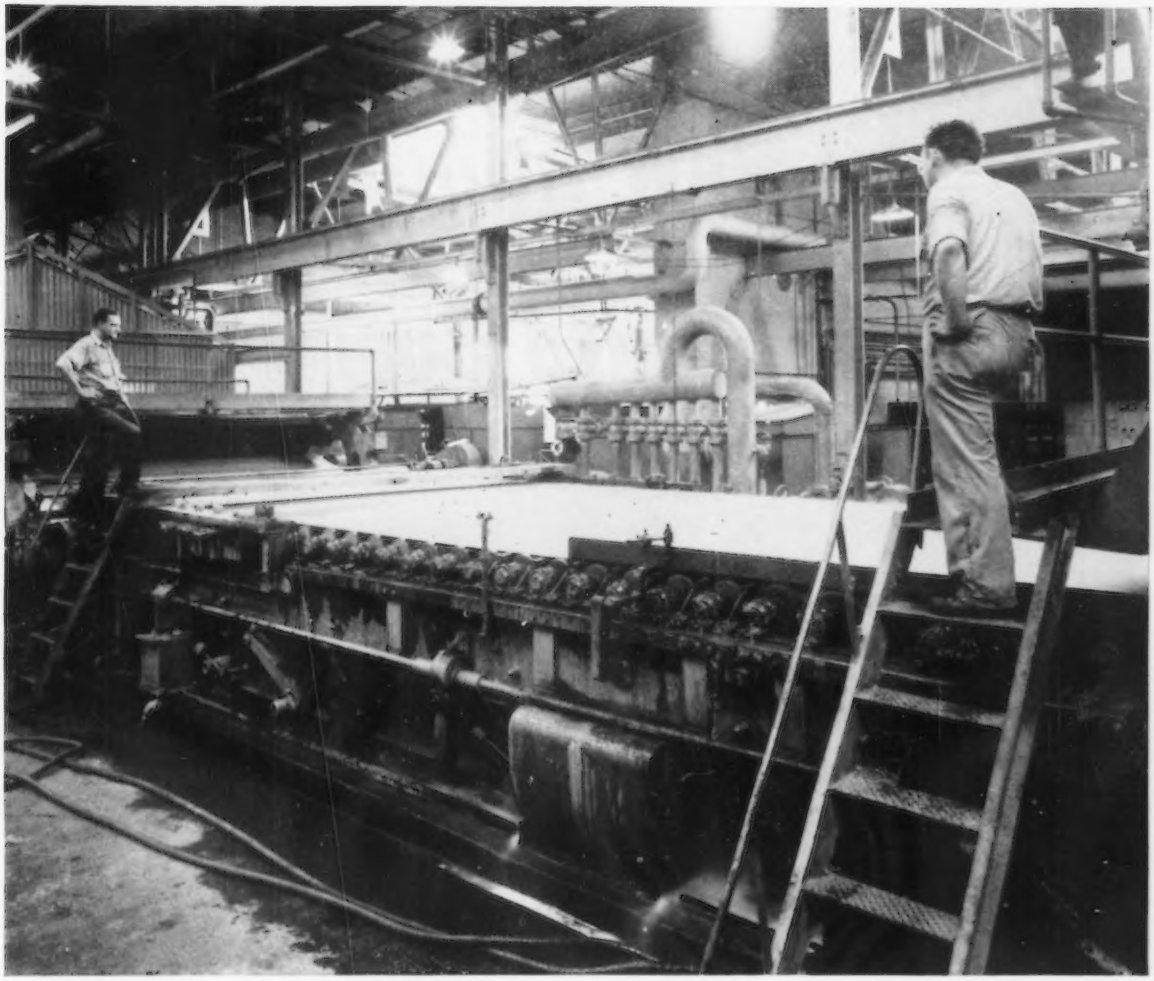

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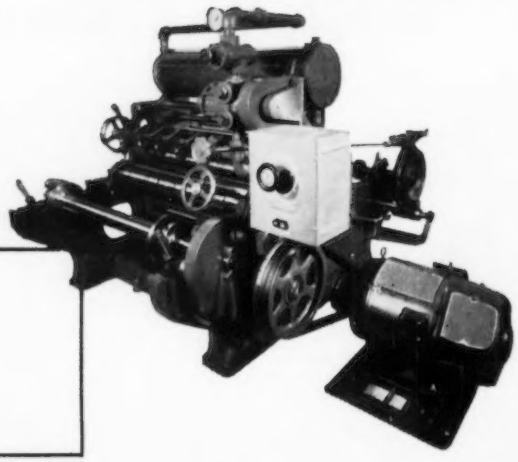

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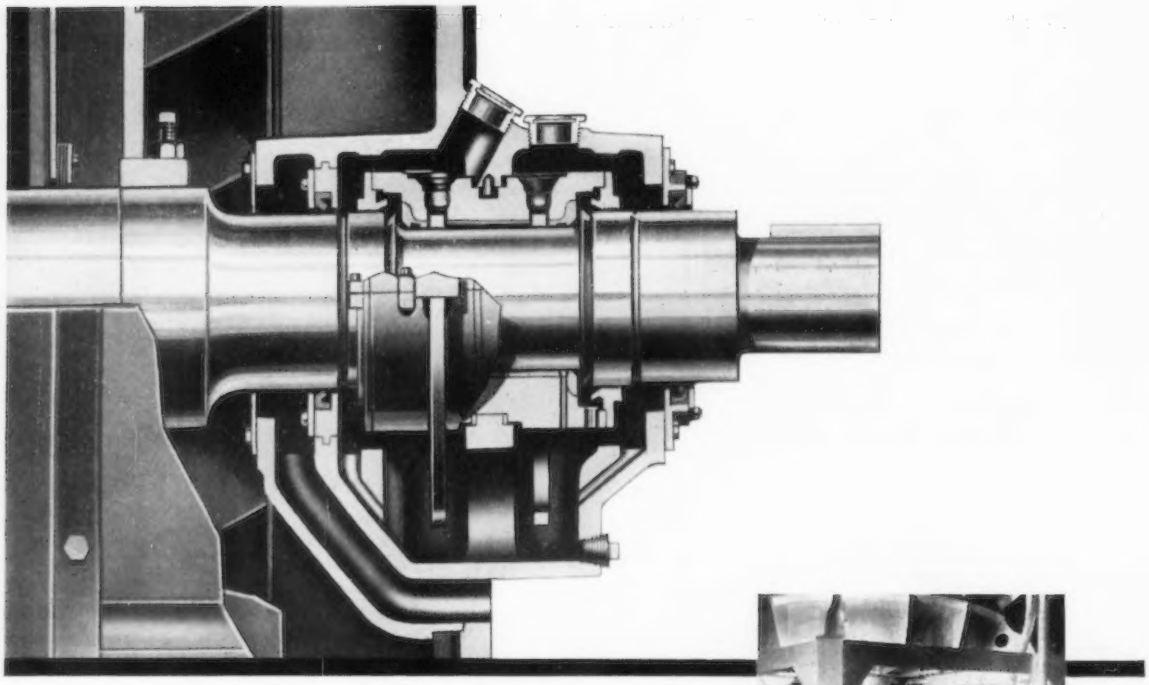
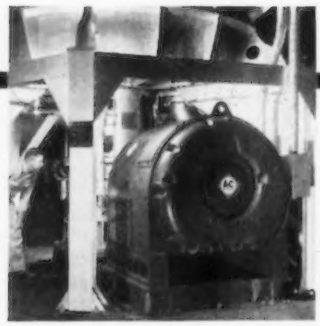


Motor Bearing is pressure-equalized with vent



Driving pulper in eastern boxboard plant.

SHAFT seals and a pressure-equalizing vent give double protection against oil leakage from this Allis-Chalmers motor bearing. First, seals keep oil inside the enclosure. Second, the pressure-equalizing vent chamber maintains atmospheric pressure at the inboard side of the bearing, so that fan action won't pull oil vapors out of bearing, under any conditions. This double protection assures oil-free motor interior and drip-free operation.

Accessible, Too!

Motor inspection is easy with capsule-type bearing housings. Upper halves of motor end shield and inner air baffle can be removed without opening the bearing enclosure or disturbing bearing alignment.

For details on these and other features of Allis-Chalmers motors, call your nearby A-C office or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wisconsin.

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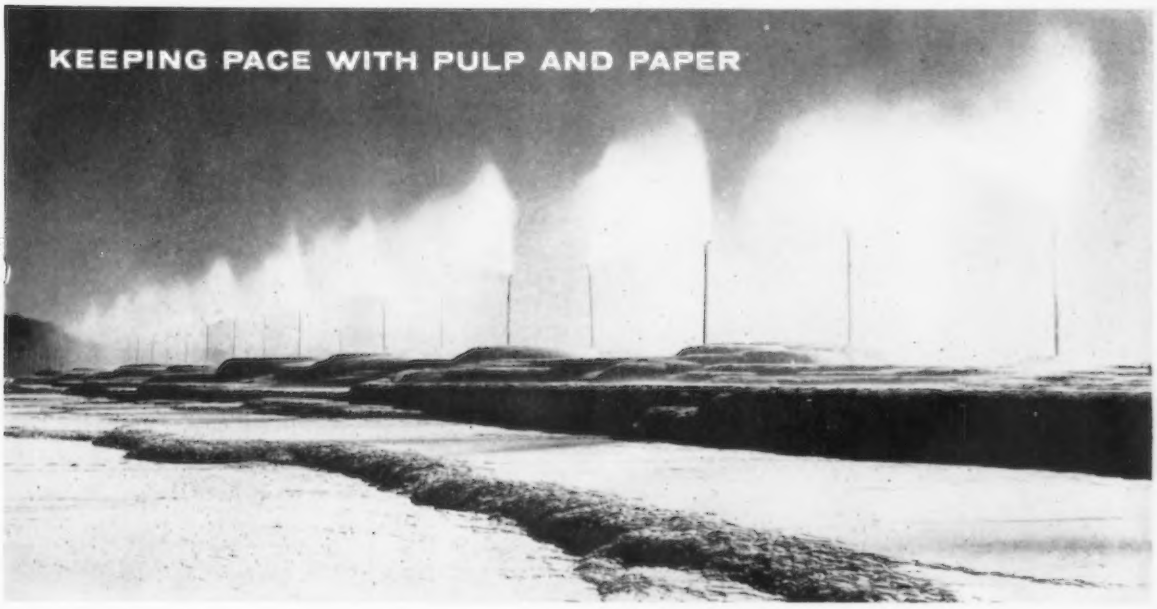

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For '58—A New Sodium Chlorate Plant at Aberdeen, Mississippi.

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Electrolytic cells at Henderson

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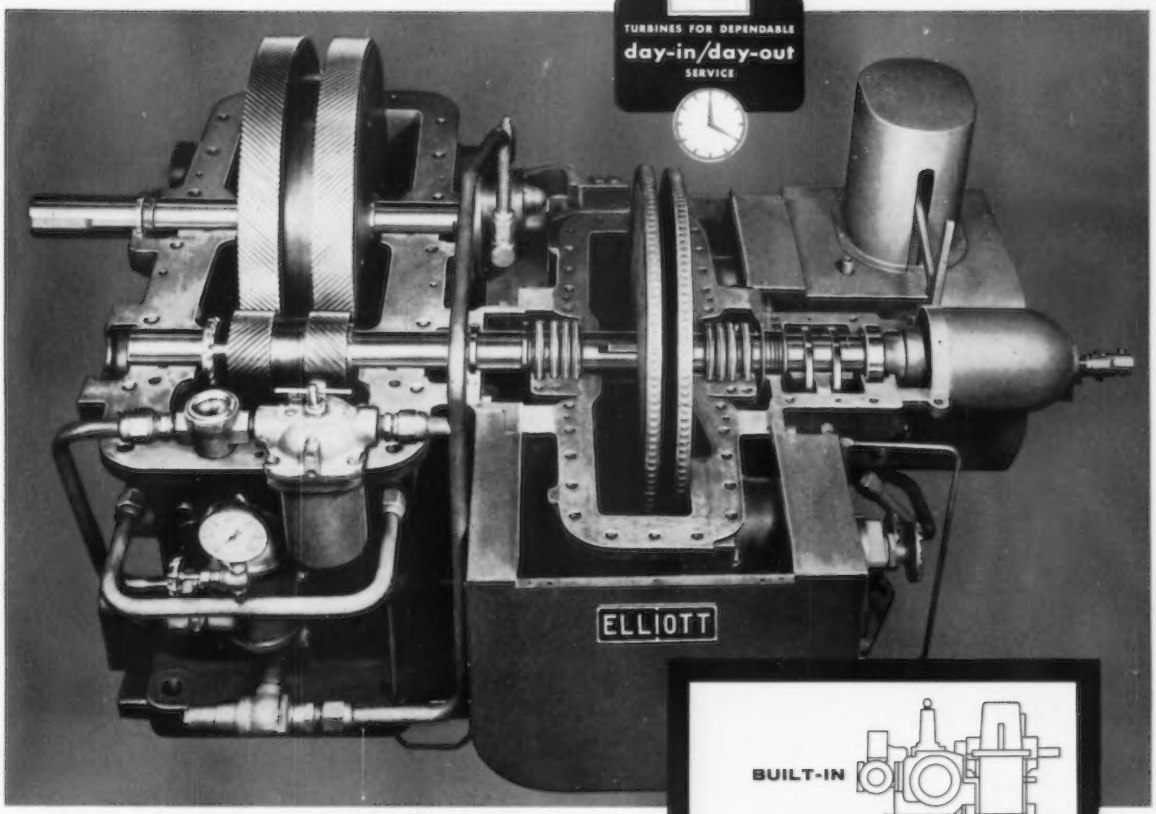

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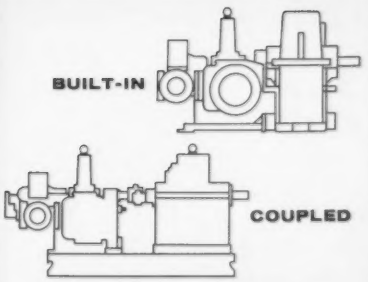
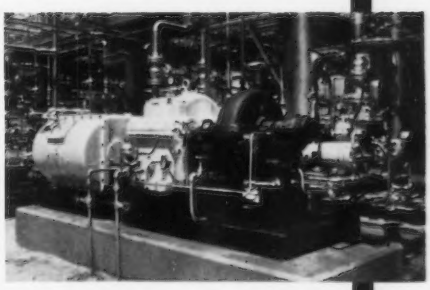
extend Elliott Turbine efficiency to broader range of applications

In operating many low-speed machines—such as fans, pumps, compressors and lineshafts—maximum overall efficiency is achieved by employing high-speed steam turbines which drive the machines through reduction gearing. Elliott has long been a leader in the design and application of geared turbines, built-in or coupled, which drive lower-speed machines without sacrificing the compact size or high operating efficiency of the turbine.

Design features of the built-in type, seen in the cutaway above, include: compact, rugged turbine and gear case, one-piece high-speed shaft, double-helical gear and pinion, dynamically balanced gears, liner-type bearings. These and other advantages assure sustained operating efficiency over the years. For details, ask your local Elliott field engineer for Bulletin H-19, or write Elliott Company, Steam Turbine Department, Jeannette, Pa.





Here a compressor in a petro-chemical plant is driven through separate Elliott reduction gearing by a YR turbine. In this type, the gears are coupled to the turbine by flexible couplings.

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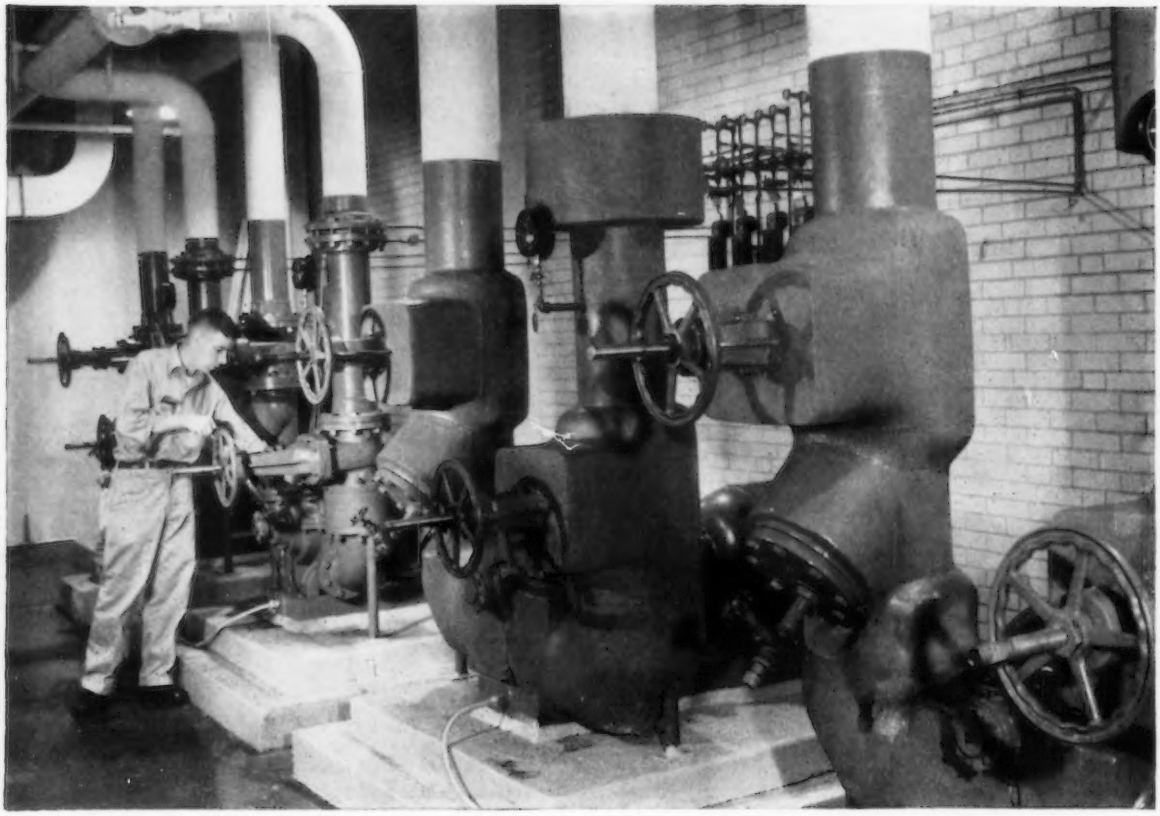
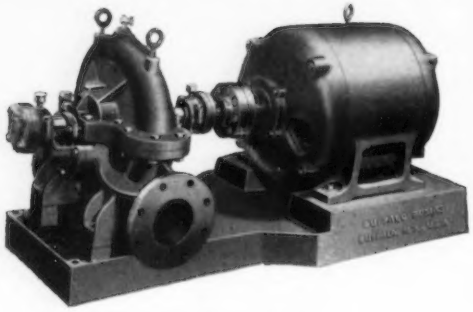
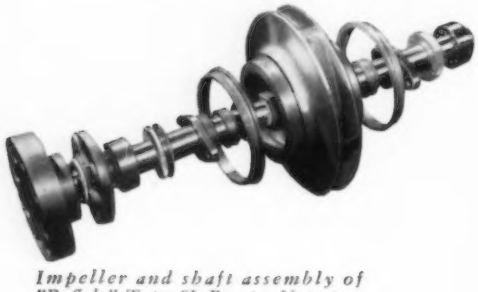




"Buffalo" Type SL Double Suction Pump, industry's choice for clear water service in capacities from 10 to 14,000 gallons per minute.



Impeller and shaft assembly of "Buffalo" Type SL Pumps. Note precision ball bearings, husky shaft, wearing rings and efficient enclosed impeller.

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"Buffalo" PUMPS like the Type SL Double Suction Pumps above, handling chilled water in a large plant, *assure* this permanent efficiency! Their design and construction go far beyond "good enough". Their ample water passages and well designed impellers — providing smooth hydraulic balance and efficiency — reflect the high standard of engineering, foundry and machining craftsmanship developed in our 80 years of building pumps. We call this standard the "Q" Factor*, and it's the reason behind the permanent pumping efficiency enjoyed by owners of "Buffalo" Pumps everywhere. Write for Bulletin 955 and see why you save by specifying the best!

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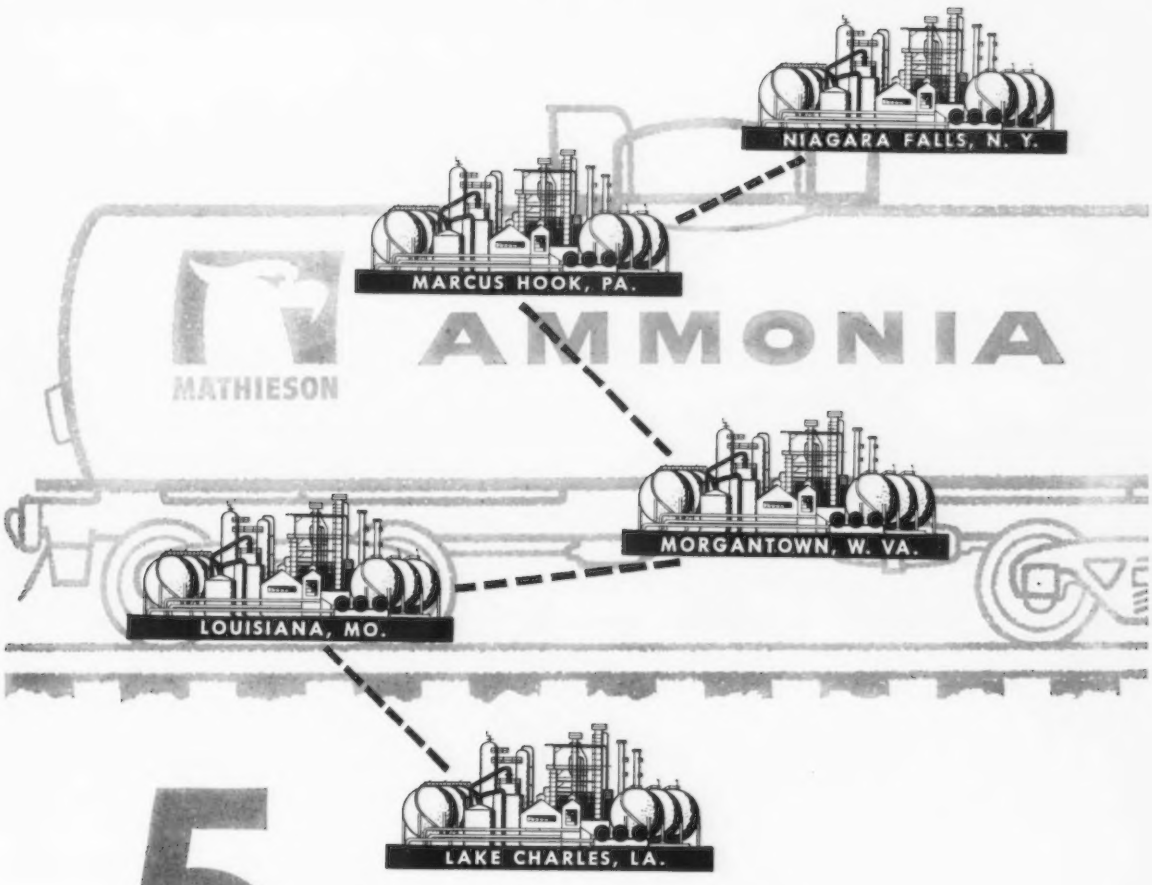

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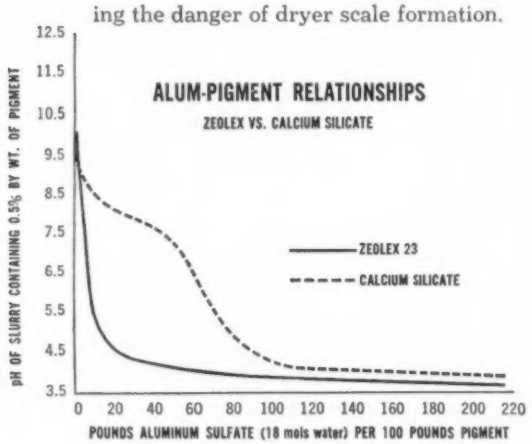
Tried, proven and used in carload lots, Zeolex 23 is one of a related group of finely divided sodium silico aluminates which can be "tailored" by Huber to fit your special paper making needs.

Let our Zeolex researchers help you with your problem. Send for descriptive folder and free working sample of Zeolex—today. Available in beaded or non-dusting pelleted form.

The Zeolexes are finely divided synthetic sodium silico aluminates, presently made within the following ranges of physical properties:

Brightness (G.E.)	93-95
Average Particle Diameter (microns)	0.02-0.05
Oil Absorption (cc/100gm)	125-165
Surface Area (B.E.T.)	50-200
Refractive Index	1.51-1.55
pH (20% slurry)	5-12
Specific Gravity	2.1
Density (lbs./cu. ft.)	10-20

This graph compares Zeolex 23 with calcium silicate pigments now being used as paper fillers. Note the low alum demand with Zeolex—in itself an economy—lessening the danger of dryer scale formation.



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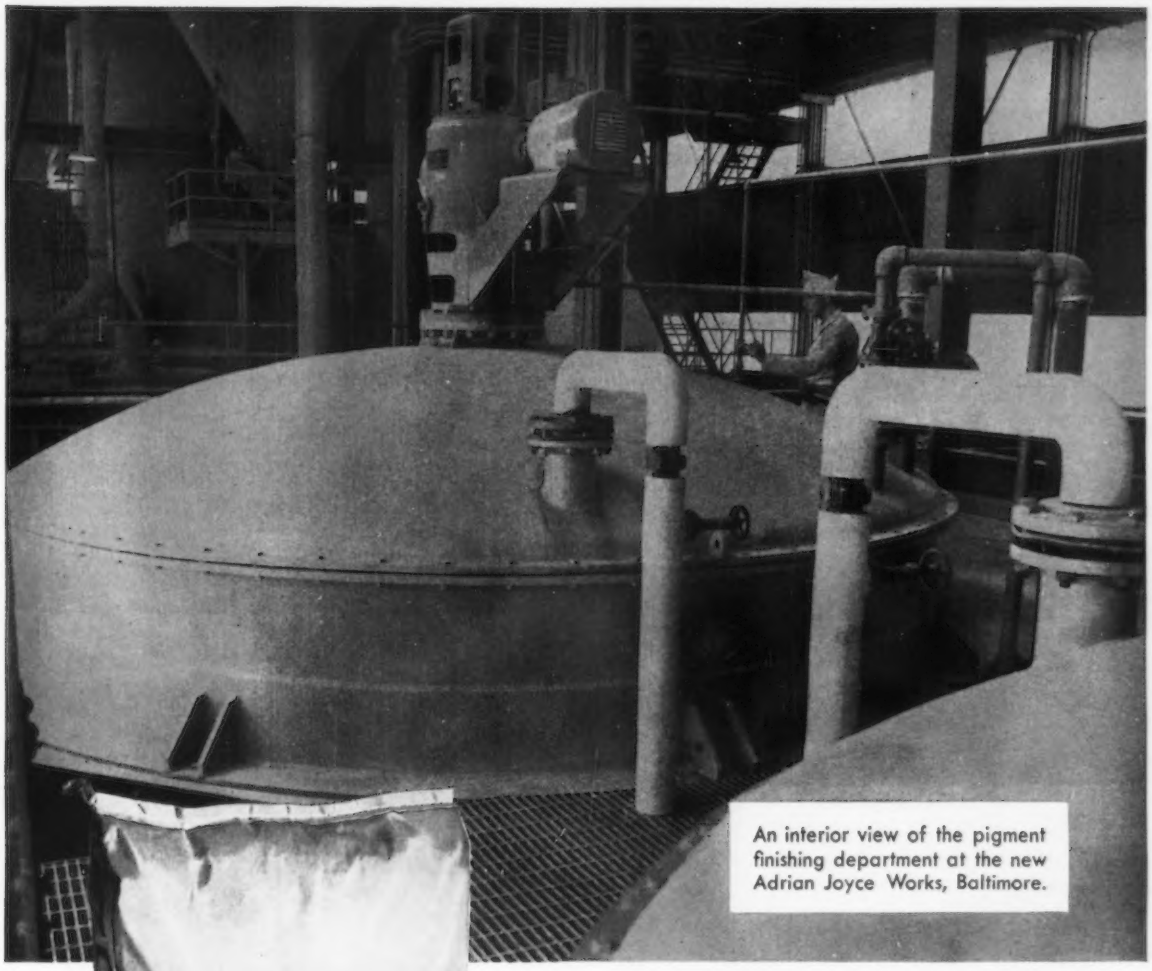

An interior view of the pigment finishing department at the new Adrian Joyce Works, Baltimore.

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You can count on Glidden to supply your complete titanium dioxide requirements. Our new Adrian Joyce Works at Baltimore more than doubles the available supply of *Zopaque* Titanium Dioxide. Further plant expansions are now being made to help meet your growing needs in the years to come!

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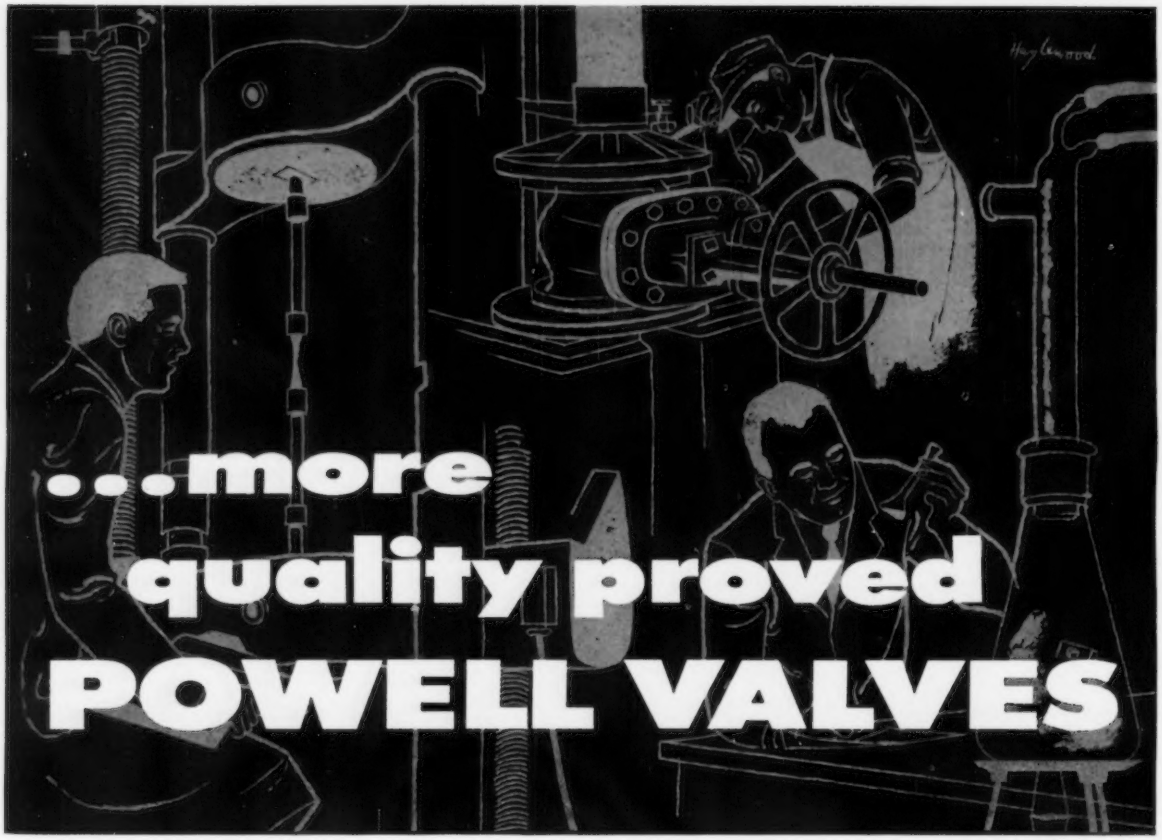
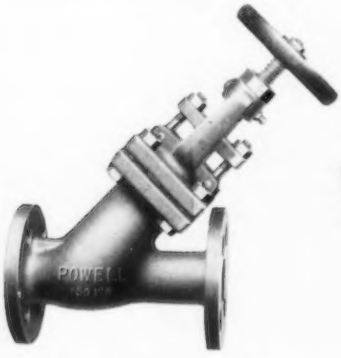


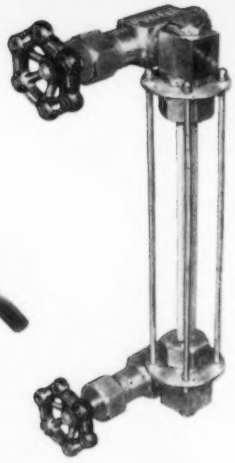
FIG. 2309—Flush Bottom Tank Valve for 150 Pounds W.P.

FIG. 2491—Stainless Steel O.S.& Y. Gate Valve for 150 Pounds W.P.

FIG. 1886—Stainless Steel Liquid Level Gauge for 350 Pounds W.W.P. Offset pattern.

FIG. 2107—Stainless Steel "Y" Valve for 150 Pounds W.P.





for dependable flow control

Consult your Powell Valve distributor for full facts about quality proved bronze, iron, steel and corrosion-resistant valves. For every flow control problem—there is a Powell Valve to solve it.

THE WM. POWELL COMPANY, CINCINNATI 22, OHIO . . . 111th YEAR

Revolutionary new Hudson-Sharp continuous running band knife

PAPER ROLL and PACKAGE CUTTER

Delivers up to 150 Rolls or Packs per minute!

• FLEXIBLE...ONE MACHINE CUTS —

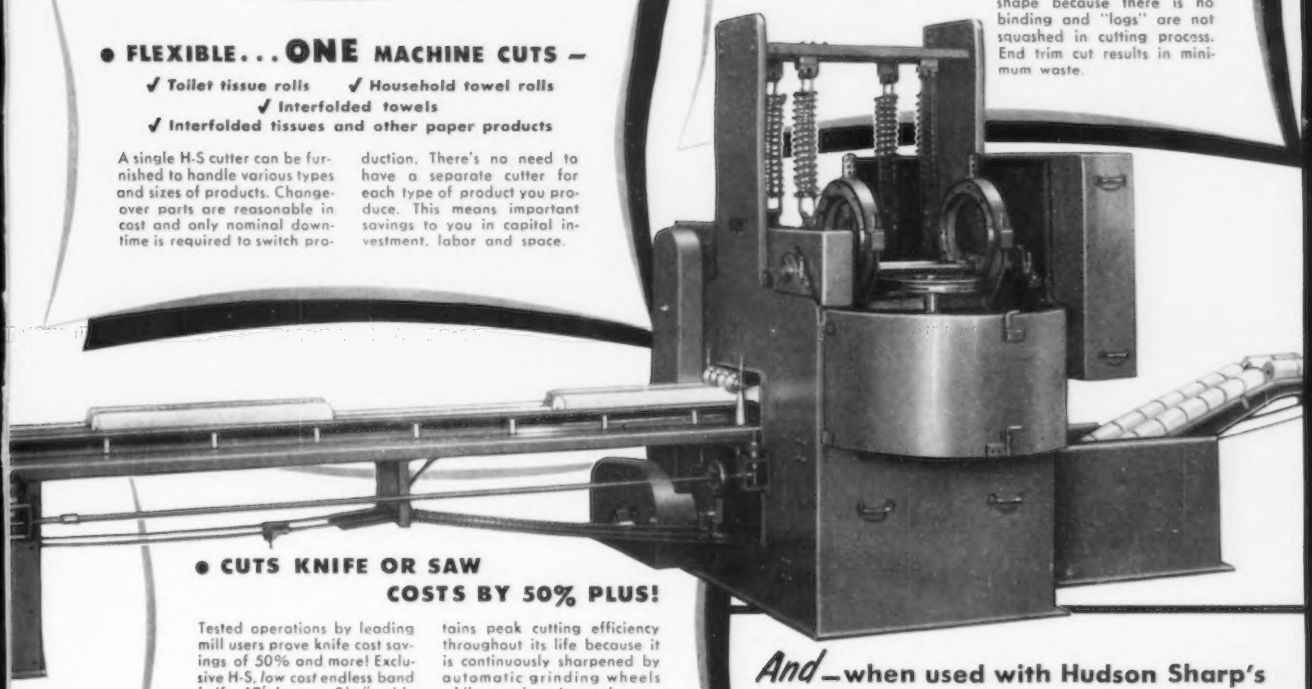
✓ Toilet tissue rolls ✓ Household towel rolls
✓ Interfolded towels
✓ Interfolded tissues and other paper products

A single H-S cutter can be furnished to handle various types and sizes of products. Change-over parts are reasonable in cost and only nominal down-time is required to switch production. There's no need to have a separate cutter for each type of product you produce. This means important savings to you in capital investment, labor and space.

• CLEAN, STRAIGHT, SQUARE EDGES —

✓ Trims paper and core evenly — cleanly
✓ No crushing — no cuts on bias
✓ Minimum waste at end cut trim

High speed continuous running band knife cuts rolls or packs with clean, dust-free, non-ragged edges for complete production satisfaction. Packs retain round or square shape because there is no binding and "logs" are not squashed in cutting process. End trim cut results in minimum waste.



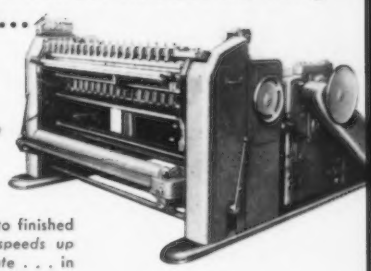
• CUTS KNIFE OR SAW COSTS BY 50% PLUS!

Tested operations by leading mill users prove knife cost savings of 50% and more! Exclusive H-S, *low cost* endless band knife 17' long x 3½" wide lasts considerably longer than conventional types. Knife maintains peak cutting efficiency throughout its life because it is continuously sharpened by automatic grinding wheels while running. *It need never be removed* until completely worn and ready for discard.

It's only natural — that Hudson Sharp should produce the "Master" of all log cutters for stepping up roll and package production with amazing new speeds. For instance, it *delivers 80 to 150 rolls or packs per minute!* — dependent upon product length. Length cuts from 4" to 12" in ½" increments can be made from log girths of 4" to 5½". Two lanes of products are fed, cut and delivered simultaneously. The H-S cutter can be used independently or in-line with automatic roll winders. Heavy-duty, sturdy construction combines simplified rotary and eccentric motion to provide smooth, dependable, trouble-free operation. Write, wire or phone collect for complete details, today!

And—when used with Hudson Sharp's 60-B Automatic, Continuous Running Roll Winder...

you have the ideal high production team!



Reduce parent rolls to finished rolls at production *speeds up to 1200 ft. per minute* . . . in web widths up to 93". Automatic, progressive winding plus finished roll stripping and the most accurate sheet or measured roll count on market are just some of the standard features. Automatic core loading attachment available. Elimination of slitters for use with log cutter speeds output, reduces web breakage and minimizes down-time. Get complete facts, now!

Manufacturers of Flexographic, Rotogravure and Oil Ink Web Printing Presses • Automatic Roll Winders • Tissue, Napkin and Towel Folders • Waxers • Embossers • Laminators • Campbell Wrappers

CONVERTING AND PRINTING EQUIPMENT

HUDSON-SHARP MACHINE CO.

GREEN BAY, WISCONSIN

SUBSIDIARY OF FOOD MACHINERY AND CHEMICAL CORPORATION

fmc

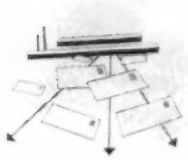
CREDO FOR THE NEW *Patterson*

of interest to every customer

WE BELIEVE IN CLOSE CUSTOMER RELATIONS

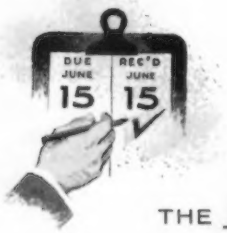
We believe that the closer our understanding of your operations and problems, the greater is our capacity to serve your interests. Accordingly we are organized throughout sales and engineering for the maximum application of study to your needs, with continual close contact maintained for the duration of every project. (We are ready when you are.)

WE BELIEVE IN PROMPT INQUIRY HANDLING



Because inquiries can smother in piles of paper, our inquiry processing is fast and thorough. A complete Customer Service Department has full responsibility for preparing specifications to your requirements, formal quotations, order entering, and the processing of sales correspondence and relative communications. (May we have your inquiry?)

WE BELIEVE IN KEEPING DELIVERY PROMISES



The whole Patterson organization becomes part of the promise when a delivery date is made. Fallibility is human, but we set our sights squarely on the target's bull's-eye from the day the promise is made—and our score is close to perfection today. (When do you need that new equipment?)

THE *Patterson* FOUNDRY AND MACHINE COMPANY

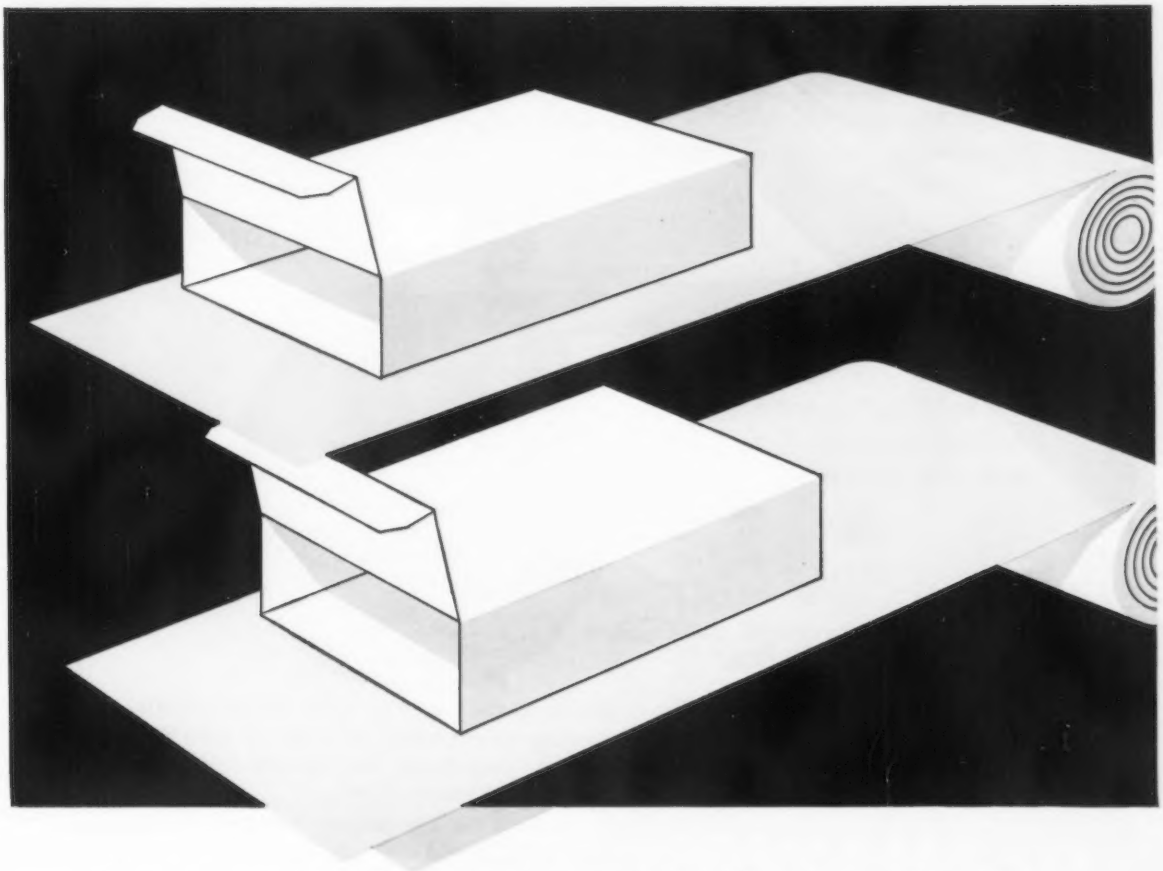
ADVANCED
PROCESS EQUIPMENT
OF ENDURING SATISFACTION

A Subsidiary of Ferro Corporation

East Liverpool, Ohio, U.S.A.

THE *Patterson* FOUNDRY AND MACHINE CO. (CANADA) LTD
Toronto, P.O., Canada

For your food products customers—



A new and better way to protect flavor and aroma

IONOL®, C.P. antioxidant

ONE OF THE most serious threats to the quality of many food products is rancidification, which damages both flavor and aroma. Now, Ionol, C.P. antioxidant provides an *effective new way* to solve this troublesome problem . . . one that will be welcomed by manufacturers of baked goods, cereals, meals, shortening, packaged meats, butter, and similar products.

Ionol, C.P. antioxidant—*incorporated into boxboard or wrapping materials in which products are packed*—protects against rancidity by preventing oxygen attack on fats right where it starts—at the surface of the carton and wrappers.

In actual tests, baked goods were stored at 85° F. in Ionol, C.P.-impregnated boxboard cartons, which were found to be free of rancidity at the end of ninety days. Without Ionol, C.P.-antioxidant protection, packages of baked goods stored under similar conditions often develop rancidity within a week.

Be among the first to offer your customers this new effective packaged foods protection. Write for the technical bulletin: "Ionol, C.P. for Impregnating Paper and Paperboard."

SHELL CHEMICAL CORPORATION

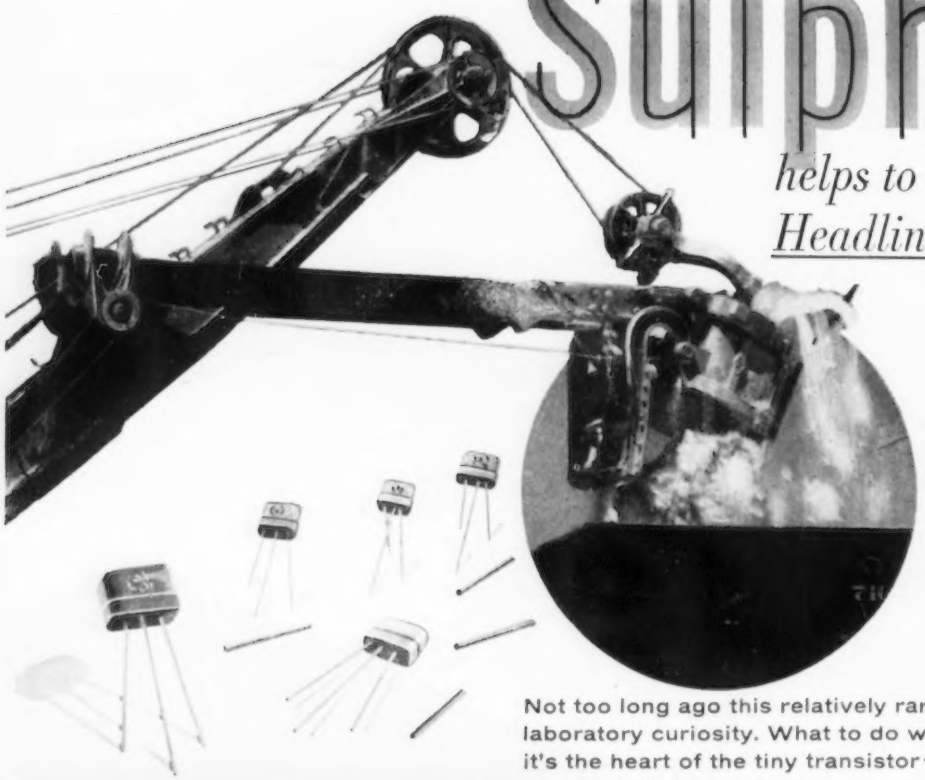
CHEMICAL SALES DIVISION, 380 Madison Avenue, New York 17, New York

Atlanta • Boston • Chicago • Cleveland • Detroit • Houston • Los Angeles • Newark • New York • San Francisco • St. Louis
IN CANADA: Chemical Division, Shell Oil Company of Canada, Limited • Montreal • Toronto • Vancouver

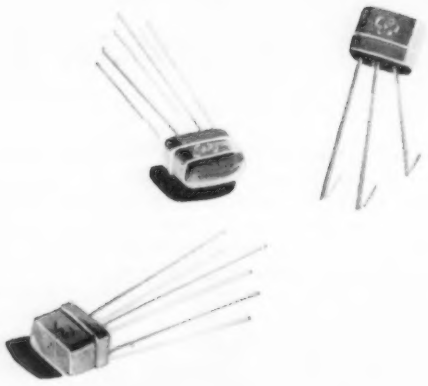
SHELL

Sulphur

helps to create
Headline Products



GERMANIUM



Not too long ago this relatively rare metal was a laboratory curiosity. What to do with it? Today, it's the heart of the tiny transistor—the latest giant of electronics!

What's the connection between Sulphur and Germanium?

There are two, in fact. One is man-made, involving the routine leaching of Germanium ores with Sulphuric Acid prior to tetrachloride distillation. The other takes advantage of a peculiar property of the natural mineral, Germanium Sulphide. This mineral can be volatilized and then sublimed, providing an effective method of separating the Germanium from gangue material. The process is called "Concentration of Germanium by Sulphide Sublimation".

Again Sulphur, through its major derivative, Sulphuric Acid, and a natural sulphide play an important role in our ever-expanding economy. It is difficult to find many items in the broad chemical-metallurgical field that do not somewhere along the production line make use of Sulphur or a derivative.

Texas Gulf Sulphur Co.

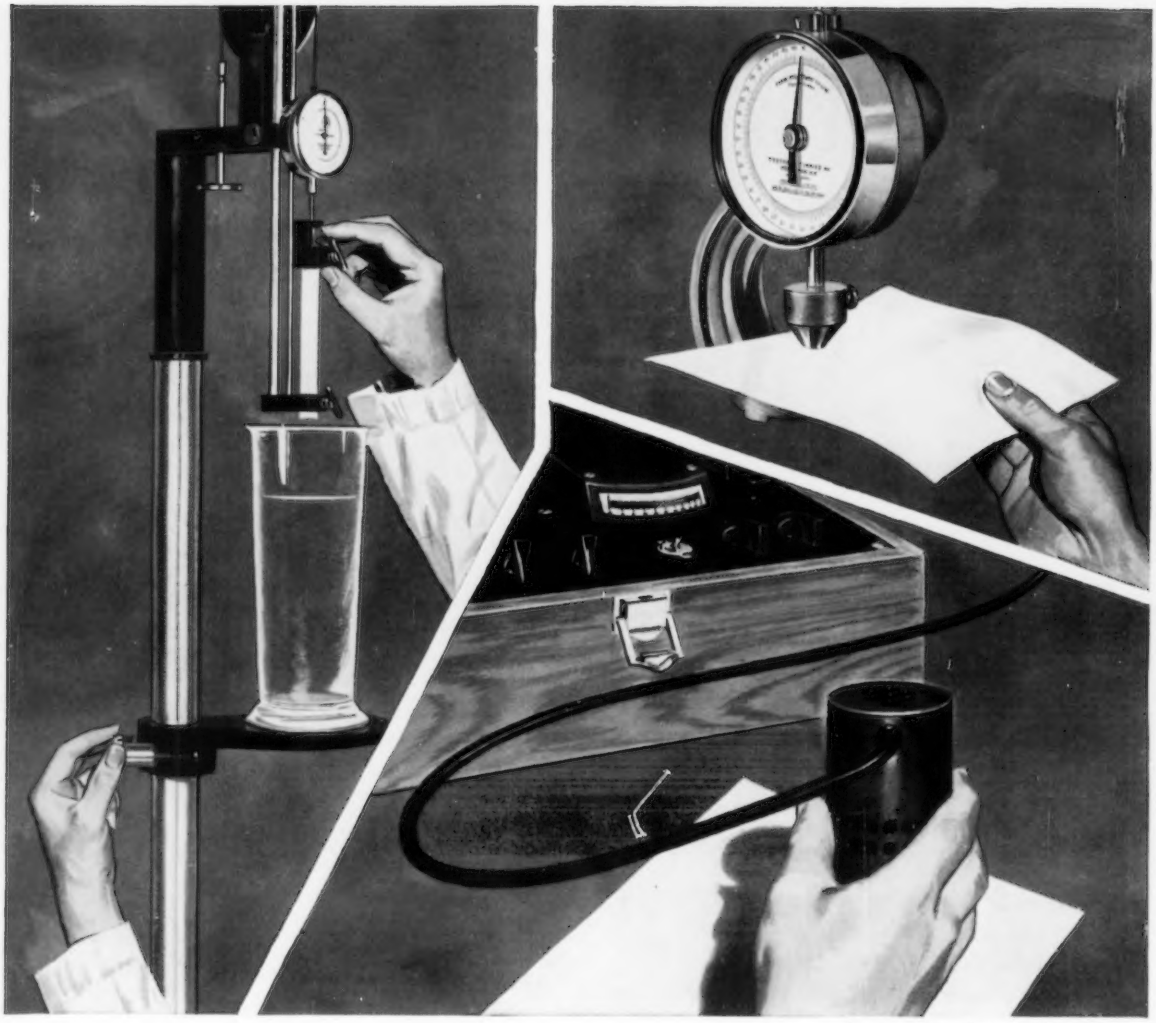
75 East 45th Street, New York 17, N. Y.
811 Rusk Avenue, Houston 2, Texas

Sulphur Producing Units
- Newgulf, Texas
- Moss Bluff, Texas
- Spindletop, Texas
- Worland, Wyoming

Research at Bauer has far reaching effects in the pulp and paper industry. Over 6000 laboratory tests and extensive field work have resulted in new processes and new machine designs, to help you produce a better product.

Typical developments include the Bauerite process of making groundwood type pulp from chips, the Bauer-Bale system of preparing pulp for storage or shipment, Pressafiners, Centri-Cleaners, double disc refiners, and pump-through refiners. Typical of the men who have made Bauer industry's headquarters for progress are Dr. Paul Glasoe, Ed Kemp, Al Adams, Ben Perks, and Bernie Vail.

The Bauer Bros. Co.
Sheridan Avenue, Springfield, Ohio



Photos Courtesy TESTING MACHINES, INC.

What paper quality do you want?

...SOLKA® Pulp

will help you!

Brightness? Opacity? Bulk? Dimensional stability? You name the quality—and there's a SOLKA Pulp *to help you achieve it!*

America's leading paper manufacturers have depended on Brown Company for scientifically correct SOLKA Pulps to match their paper needs for more than half a century. Today, our vast timberland resources, top flight research facilities, and modern manufacturing plants offer you even finer pulps to fit your requirements.

Let us know your problems. Write Dept. PB-8, our Boston office. Address inquiries in Canada to Brown Forest Products Ltd., Castle Building, Montreal.

BROWN COMPANY

150 Causeway Street, Boston 14, Massachusetts
Mills: Berlin and Gorham, New Hampshire

• In the solution of your problems, Du Pont's paper laboratory can duplicate every step of papermaking. Here beaten stock is being drawn from beater.

Experts at your elbow... Du Pont's versatile paper lab to help solve your pigmenting problems

• At the other end of the operation. Supercalendering a hand sheet that will later undergo many other tests of quality.

When you have a problem involving the use of pigments, the personnel and equipment at the Du Pont paper laboratory at Newport, Delaware, are on hand to aid in its solution.

Because this laboratory is constantly searching for improved and more economical ways to use pigments in papermaking, the solution of your problem may already be on file here. If not, the laboratory will attempt to duplicate your papermaking operation—from beater to finished product—to find the answer. But this is just a part of the role the laboratory plays in the well-rounded service program offered you by the Pigments Department.

In addition to research and information, the paper laboratory also keeps Du Pont representatives posted on latest developments. Here Du Pont field and sales personnel—the men who call on you in your plant—receive a thorough and intensive education in the use of pigments in papermaking. This enables them to provide competent information... or to accurately relay your problem to the laboratory where it is given prompt attention.

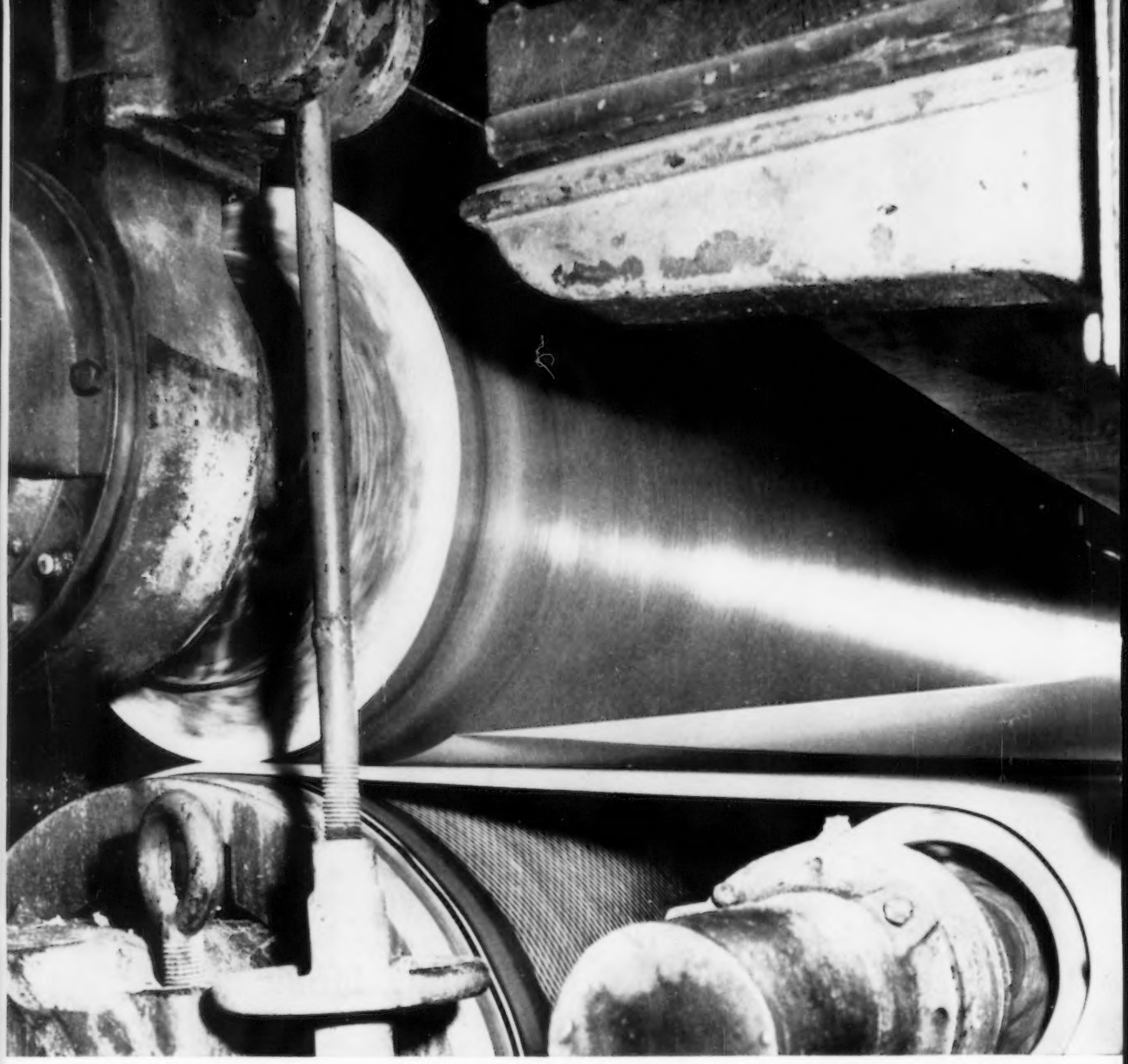
Du Pont, serving the paper industry with "Ti-Pure" titanium dioxide white pigments for more than 20 years, offers the assistance of its completely equipped paper laboratory in your papermaking problems. For complete information or technical assistance, write: E. I. du Pont de Nemours & Co. (Inc.), Pigments Department, Wilmington 98, Delaware.

PIGMENTS DEPARTMENT

DU PONT

REG. U.S. PAT. OFF.

Better Things for Better Living ... through Chemistry



high production speeds depend on clean sheet release . . . like this

Perhaps the one most important quality sought in press rolls is the ability to release the paper web cleanly, and without any trace of picking or sticking. To insure this quality in the rolls which they buy, and to further insure other desirable features such as proper "nip", "cushion" and longer life on the machine, a majority of the country's leading mills and machine builders have learned to consult their Stowe-Woodward Sales Engineer.

Complete roll processing plants at:
NEWTON UPPER FALLS, MASS.
NEENAH, WISCONSIN
GRIFFIN, GEORGIA

S-W

STOWE-WOODWARD, Inc.
Craftsmen in rubber
RUBBER ROLLS with a REPUTATION

New York office: WOOLWORTH BUILDING, NEW YORK 7, N. Y.

On the West Coast: HUNTINGTON RUBBER MILLS, INC., SEATTLE

May Production of Paper and Board

Paper and Board production during May amounted to 2,674,210 tons. This was 3% below the 2,761,761 tons produced in May a year ago. Paper production amounted to 1,181,368 tons, which was 1% below the 1,197,492 tons produced in May a year ago. The output of paperboard during this month was 1,235,638 tons, reflecting a 3% decrease under the production of 1,274,198 tons reported for May 1956.

Fine Paper Prices Up

Prices of most grades of fine papers were advanced in July. The increase is said to average 3% over all grades.

New Pattern Of Drug Selling

Pharmaceutical manufacturers are beginning to let the package take on some of the responsibility for suggesting and explaining medicines. The fact that pharmaceutical firms, as well as manufacturers of all types of drugstore products, are developing more impulse-buying packages is reported in a new survey recently completed by the Folding Paper Box Assn. The study also makes the point that as drug stores shift increasingly to self selection to meet competition from other retailers, still more and still better packaging will be needed.

Set-Up Boxes In First Half

The month of June showed a 3.4% decline in dollar value of billings and 5.7% drop in value of orders booked for the set-up box industry compared with the same period in 1956. For the first half of 1957, national sales were 2.2% off the 1956 pace, while orders were 3.5% behind the 1956 mid-year total.

Paper and Board Ratings for July

Paper mills operated at about 75% of rated capacity in July and board mills at about 72%. This compares with 86% and 77% respectively for July last year. This year's decline is due not only to the seasonal effect and the Fourth of July holiday but also because many mills are taking additional down time to permit consumption to catch up on high inventories.

Too Much Newsprint For Publishers

In spite of the continuing protest actions of newspaper publishers about a present and future newsprint shortage, mills producing this grade, like all other paper mills, are running at something less than full capacity.

Engineering Shortage Easing Up?

Reported signs of easing of the shortage of engineers in some areas may be a sign of a trend which will be welcome news to our industry.

Work with your AIM*. . . Hawthorne Paper Co. does . . .

Steel Strapping Idea protects paper shipments

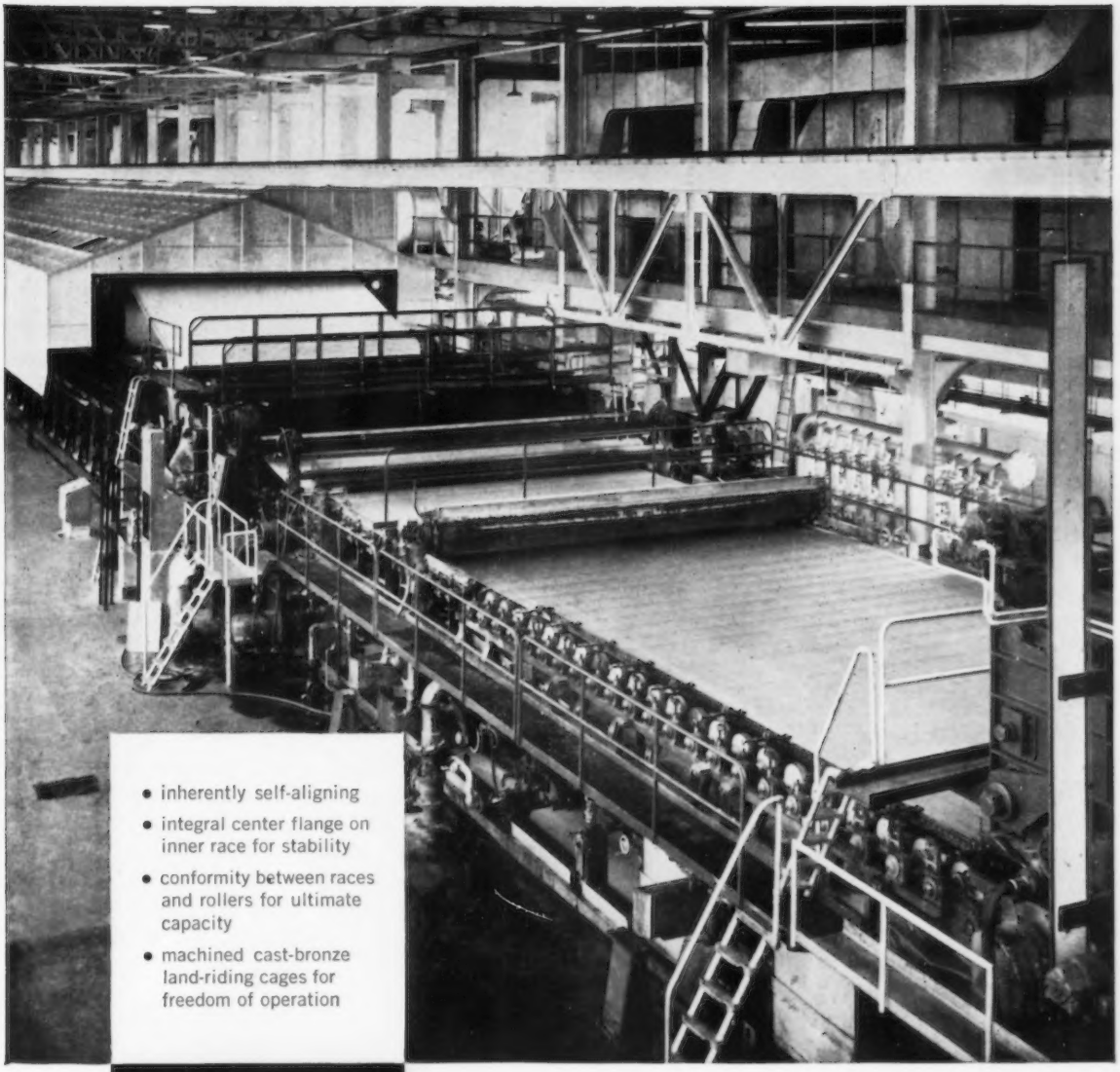
HAWTHORNE PAPER COMPANY, Kalamazoo, Michigan, required a procedure to insure protection and safe arrival for rail shipments of quality rag content bond and ledger papers. Working with their Acme Idea Man, they adopted a better method of bracing steel-strapped skid loads of paper in box cars. (Idea U1-12)

Acme Idea Man Chuck Deerwester helped Hawthorne Paper Company develop this improved car bracing method.

Protected by heavy-duty Acme Steel Strapping, skids of paper are braced to form a controlled floating load. Thus, in-transit shocks and impacts are absorbed and Hawthorne paper arrives without damage, ready for feeding from skid to printing press. In addition to greater customer satisfaction, Hawthorne enjoys important time and material savings over their former car bracing method.

***WORK WITH YOUR ACME IDEA MAN.** His wide experience in solving product protection and shipping problems is sure to result in Ideas that will benefit you. Call him at your nearest Acme Steel office. Or write Dept. PCU-87, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Ltd., 743 Warden Avenue, Toronto 13, Ontario.

ACME STEEL **STEEL STRAPPING**



- inherently self-aligning
- integral center flange on inner race for stability
- conformity between races and rollers for ultimate capacity
- machined cast-bronze land-riding cages for freedom of operation

A New World's Record!

World's record on 50# Kraft bag paper—2,200 fpm—is held by this 232-inch paper machine built by Beloit Iron Works for St. Regis Paper Company at Jacksonville, Florida.

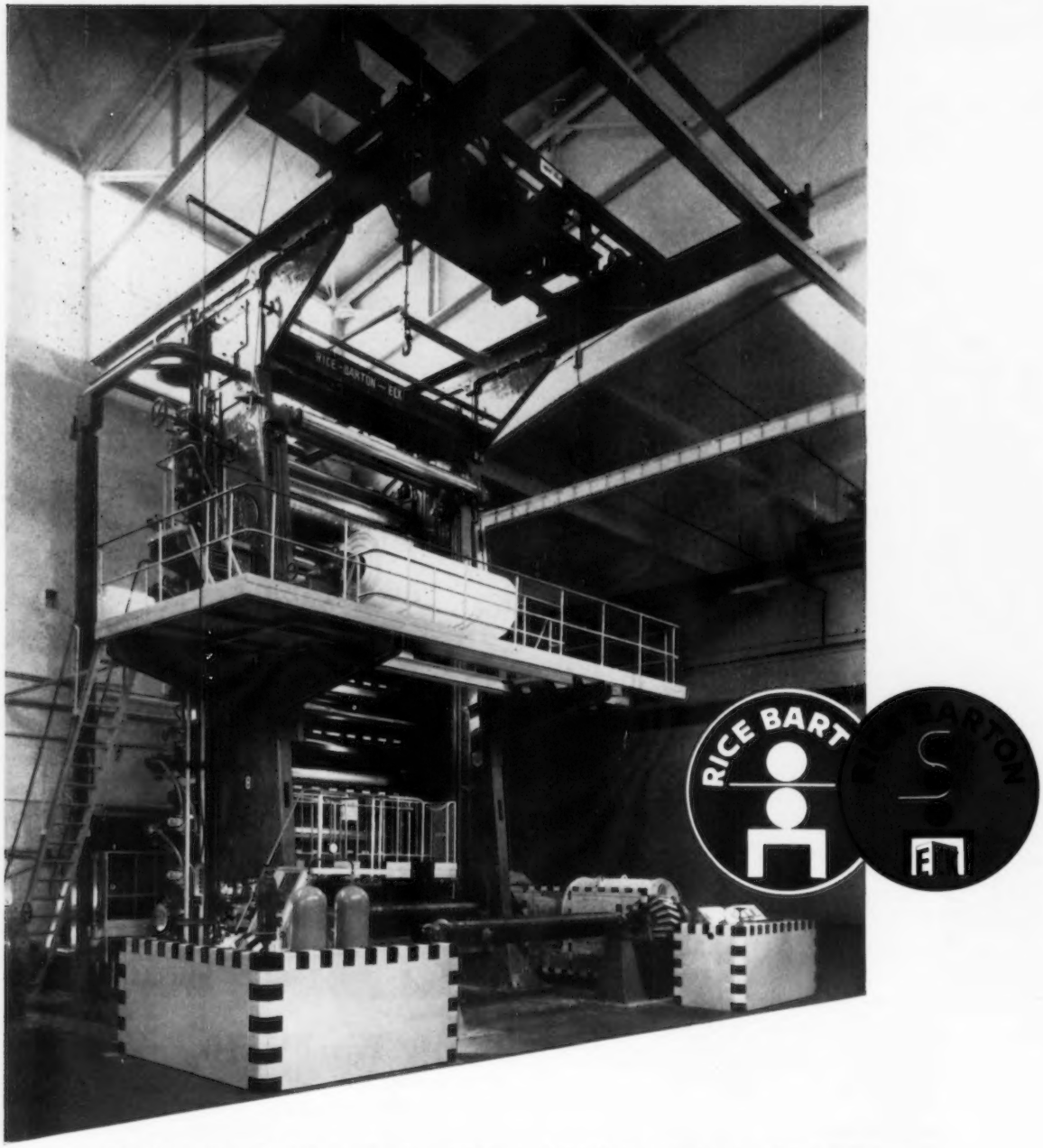
Contributing to this performance are 718 Torrington Spherical Roller Bearings on wire rolls, press felt rolls, top press rolls, paper and felt driers and idlers, calenders, suction couch and press rolls, reels and winders. Inherently self-aligning, these bearings compensate for shaft deflection across the machine and eliminate need for periodic realignment.

Torrington Spherical Roller Bearings are available from stock with straight or tapered bores for shaft or adapter mounting. When you are counting on production, count on Torrington Spherical Roller Bearings for smoother, faster, more economical service from wet end to winder. *The Torrington Company,* South Bend 21, Ind.—and Torrington, Conn.

TORRINGTON BEARINGS

District Offices and Distributors in Principal Cities of United States and Canada

SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • NEEDLE • BALL • NEEDLE ROLLERS • THRUST



To Rice Barton's 120 years of reputable service to the paper industry has been added the 120 years of supercalender design and manufacturing experience of Joseph Eck and Sons. This combination has produced, in the Rice Barton-Eck Supercalender, the most modern supercalender available today.

Open frame construction, faster roll changes, perfect alignment of rolls regardless of diameter, elevators, hydropneumatic pressure systems, and built-in cranes, are but a few of the advanced features which have already caused six of America's leading paper mills to order Rice Barton-Eck Supercalenders.

RICE BARTON CORPORATION

Worcester, Massachusetts

Paper Machine Builders Since 1837

West Coast Distributor: **Ray Smythe . . .** 511 Park Building • Portland, Oregon

Propose New Alberta Pulp Mill

Plans to build a pulp mill in the White Court area, 110 miles northwest of Edmonton, have been announced by Alberta West, Forest Products Corp. Ltd., a newly incorporated Alberta company with offices in Edmonton.

Gordon McNab, president, and Roy Morton, vice president, said plans call for the mill to be in the White Court area, due to the proximity of extensive timber resources. The mill will be on the Athabasca river or some suitable site north of the river.

Negotiations are in the preliminary stage. Antler Wood Products previously had a lease option on the area which lapsed June 1 and was not renewed.

In addition to Mr. McNab and Mr. Morton, two Edmonton men, Frank L. Day and J. Gordon Thompson, are among the principals in the new company.

Plan Paper Mill For Northwest La.

Plans for the construction of a paper mill in northwest Louisiana were revealed with the filing of a domestic charter in the office of Secretary of State Wade O. Martin Jr.

The Noralyn Paper Mills, Inc. was incorporated with an authorized capital of $1,383,000. Headquarters of the firm were listed as the offices of a local law firm.

The proposed mill will utilize a process reportedly developed by John W. Natwick, an officer in the new company. Officials of the firm declined to comment on the exact location for the proposed mill, but it is thought that two sites near Zwolle, La., are under study.

Shreveport Attorney John S. Gatti is secretary and one of the incorporators of the company. Other officers include Leo L. Stack of Dallas, president; Mr. Natwick, vice president; Herbert E. Arnold of Dallas, vice president and treasurer; and Watt Watkins of Austin, Texas, vice president.

More on Sale of Racquette River Mill

Negotiations for the sale of Racquette River Paper Corp.'s pulp and paper-making facilities in Potsdam, N. Y., to Nekoosa-Edwards Paper Co., announced in last week's issue, are in progress. Details of the purchase are expected to be completed within two weeks.

The Racquette River firm is a division of Orchard Paper Co., St. Louis, Mo., converters of paper and paper-board specialty materials, which also operates converting plants in St. Louis and Los Angeles, California.

In a joint statement issued by the presidents of the two companies, it was pointed out that the Wisconsin firm intends to purchase all the pulp, paper and power-producing properties. Racquette River Paper Corp. would continue to operate the paper converting facilities at Potsdam.

The statement said that Nekoosa-Edwards plans to put into effect immediately an expansion and modernization program aimed at increasing production facilities at the Racquette River mill. Principal items in this program include building a pulp bleaching plant, a process water treatment plant, transfer of a paper machine from the Wisconsin company's Nekoosa mill to Potsdam and modification of present machines now in operation at the Racquette River mill.

Orchard plans to expand its Racquette River converting plant immediately with the addition of new bag making equipment, new printing presses and other converting machines. Orchard stated it is expected that the Racquette River converting facilities will double in size within the next three years.

W. Va. Enters Grocery Bag Field

West Virginia Pulp and Paper Co. has made plans to enter the grocery bag manufacturing field. The new enterprise will be located in a building adjacent to the company's Charleston, S. C., mill. Equipment has already been ordered for installation and the company expects the new plant to be producing grocery bags by the first of next year. Paper for the grocery bag operation will be made on the company's recently completed kraft paper machine at Charleston, which is expected to go into production within the next few months.

George Webber, formerly the company's senior market analyst at Charleston, has been made manager of the new operation. He is currently recruiting the needed production and sales personnel.

The company has decided to enter the bag-making business for three reasons: 1) the grocery bag market promises to be a steadily growing portion of the total kraft paper business, 2) West Virginia has under development and very soon expects to be able to produce a new type of material which is unusually well suited for this field, and 3) the fact that the major part of grocery bag production today is fully integrated makes it necessary for the company to enter the market on an integrated basis.

"The new converting operation will be limited to grocery bags. The company has no present plans for the production of other types of bags or other products converted from kraft paper," a West Virginia official stated.

K-C to Own Part of West German Plant

Kimberly-Clark Corp. is joining with a Dutch and a German firm to establish a paper products plant in West Germany.

K-C has joined Unilever N. V. of Rotterdam and Aschaffenburger-Zellstoffwerke A. G. of Aschaffenburg to set up a crepe wadding plant at an undesignated West German site.

The plant, scheduled to begin operation this fall, will manufacture tissues for sale on the continent. Each participating firm has a one-third interest.

Rayonier's New Applied Research Headquarters

Headquarters of Rayonier's new Eastern Research Division in Whippany, N. J. is manned by a staff of 76 scientists and other personnel. Complete with pilot plant facilities, this division's field is applied research in the conversion of pulp into new and improved end products. This includes developing new processes involving the use of chemical pulp. The division will also carry on fundamental research in high polymers.

The pilot plant converts pulp into fiber, film and plastics.

Complete Second WMU Coated Paper Course

Twenty-one persons from across the United States enrolled in the second three-week course in the "Principles and Practice of Coated Paper Manufacture", which closed August 3 at Western Michigan University's department of paper technology, Kalamazoo, Mich.

Serving as the instructors for the group were Dr. A. H. Nadelman, Dr. R. A. Diehm, Miss Carola Trittin and Raymond L. Janes.

Pictured, left to right, first row, are: J. B. Fleming, Jr., Fleming and Sons; I. P. Hammer, Socony Mobil Oil Co.; Girard W. Phelps, United Clay Mines Corp.; Charles W. Turner, A. E. Staley Mfg. Co.; David Little, St. Regis Paper Co., Pensacola, Fla.; Joseph J. Lugar, Weston Paper & Mfg. Co., and Ralph W. Smith, Mississippi Lime Co., Ste. Genevieve, Mo.

Second row: Siegfried Meinstein, Witco Chemical Co.; Karl T. Manthey, J. M. Huber Co.; John E. Nordgren, Black Clawson Co., Fulton, N. Y.; Ben V. Pearman, Jr., West Virginia Pulp and Paper Co., Covington, Va.; Raymond L. Janes, WMU, and Joseph E. Bajek, Moringstar-Nicol Col.

Third row: William Raidla, Beveridge Paper Co.; Leonard J. Coughlin, Penick & Ford, Ltd.; Gordon J. Gill, Penick & Ford, Ltd.; George P. Colgen, Air Reduction Co., and A. H. Nadelman, WMU.

Fourth row: James J. Grovenstein, St. Marys Kraft Corp.; Robert W. Kreider, General Tire & Rubber Co.; Cletus O. Martin, Minerals & Chemicals Corp.; James S. Thornton, Frank W. Egan & Co.; Robert A. Diehm and Miss Carola Trittin, WMU.

Paper and Board Production

According to the American Paper and Pulp Association, the ratio of the United States production to mill capacity for the week ending July 20, 1957, was 83.2 percent compared with 76.0 percent, revised for the preceding week. The ratio was 96.1 percent for the corresponding week a year ago. Mills producing newsprint exclusively are not included.

The paper board production ratio for the week ending July 20, 1957 was 87 percent, compared with 70 percent for the preceding week and 89 percent for the corresponding week last year.

(Detailed statistics on page 62)

Hammermill Strike Settled

The two month old strike of the United Paper Workers at Hammermill Paper Co. was settled early this week. Principal basis of the settlement embodied in a two year contract, was a 12 cent an hour over-all increase for the first year and a 9 cent an hour increase for the second year.

Consolidated Opens New Lab

Consolidated Paper Corp.'s new million dollar research center at Grand'-Mère, Que., was opened this month.

The center contains a number of chemical and engineering laboratories, complete pulp and paper testing laboratories, a photographic lab, a modern technical library, lecture and conference rooms and numerous offices for research and administrative personnel.

A large pilot plant area connected to the main research building is being equipped with a variety of pilot scale equipment for investigation in the fields of chemical pulping, paper machine design and byproducts development.

Quebec Mill Sues Engineering Firm

Quebec North Shore Paper Co. has launched a $2,300,000 suit against a Montreal civil engineering firm it holds responsible for a fire that razed 300 sq. mi. of company timberland two years ago.

The company has initiated the action in Quebec superior court against Arthur Surveyer, Emile Meniger and George Chenevert, partners in a firm that was conducting surveys in the Baie Comeau region of northern Quebec for the Quebec hydro commission.

The paper company complaint says a five-man survey party broke the existing ban on forest travel in the district in July, 1955, and as a result caused a fire that burned out a large section of the company timberlands.

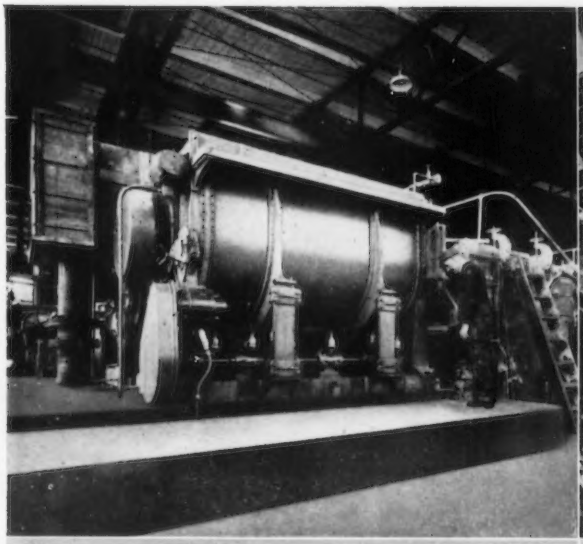
Duberstein Buys Midwest Paper Stock

Duberstein Iron & Paper Co., Dayton, Ohio, has purchased for $250,000 the Midwest Paper Stock Co., 1433 S. Euclid Ave., Dayton. Duberstein bought the real estate and buildings from Stone Container Corp. which has its principal offices in Chicago and a mill at Franklin, Ohio.

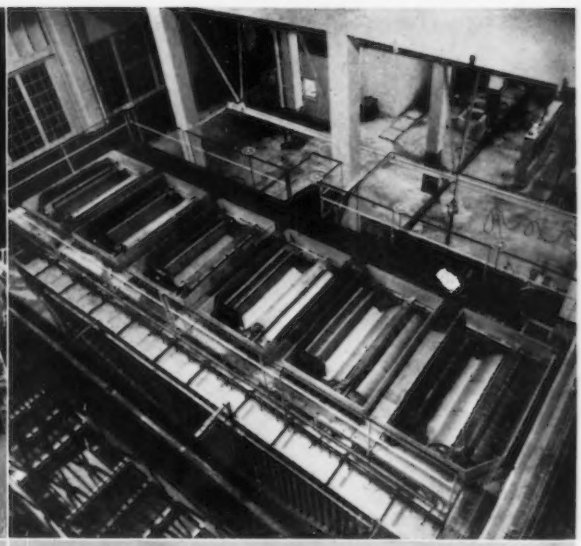
Mose Dubenstein, president of the firm, said his company will continue to operate the Midwest firm with Al Kaplan, who has been general manager, remaining in that capacity.

To Make Your Paper Easier To Sell...

Make it BIRD SCREEN CLEAN



One of a battery of Bird Screens in a mill producing high grade book and coated papers.



Bird Screens on newsprint, feeding two machines producing 365 tons per day.

Bird slotted plate screening of your stock just before it flows onto the paper machine wire helps you to meet the standards of cleanness and uniformity paper buyers are beginning to demand.

Bird Screens remove dirt and foreign matter differing in size from the fibre. They deliver the stock uniform in weight, free of lumps, strings and slime. They comb out and individualize the fibres assuring good sheet formation.

For the cleanest paper you can make, you need Bird Screens.

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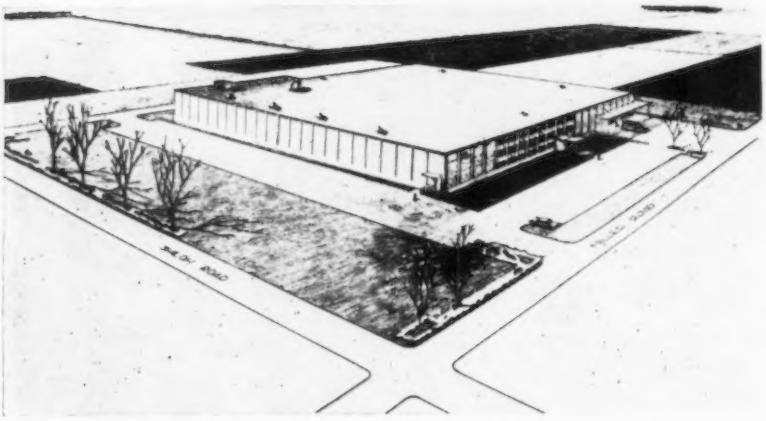
NEWS OF CONVERTERS



Pollock Container Plant to Start-up Next Month

Pollock Container Corp. will start production of corrugated boxes to serve the Southwest in mid-September, according to Lawrence S. Pollock, president of Pollock Paper Corp., Dallas, Texas of which the new corporation is a wholly owned subsidiary.

The plant of the company is now nearing completion at Garland, a suburb of Dallas. Cost of the building including land and equipment will exceed $2,000,000. When working at capacity the plant will employ 150 persons and will be capable of turning out 60,000,000 sq. ft. of corrugated boxes a month. The building will be of concrete lift-slab construction and will have an interior area of 115,000 square feet of working space.

Mr. Pollock is president of the new corporation, Robert E. Cole, first vice president, and John C. Hunt, Jr. is vice president and general manager.

Pollock Container Corp. will be a primary converter of paper board into corrugated boxes. Source of raw material is by an affiliation with St. Regis Paper Co.

Corrugated boxes will be produced on an 85 in. Langston corrugator which is 312 ft. long. An exclusive automatic order changer permits change in sizes of boxes being produced while the corrugator runs at maximum production speed. Boxes will be produced with A, B and C flutes and in single, double and triple wall thicknesses. This will be the only plant in the area to produce a triple-walled corrugated box.

Hankins to Expand Little Rock Plant

Hankins Container Co. has started construction of an 86,500 sq. ft. addition to its Little Rock, Ark., plant.

In addition to enlarging its plant, Hankins will install a corrugating machine. The firm now is buying corrugated sheets from suppliers or obtaining them from other Hankins plants.

One of the major products of the company is lamp wrappers. These are the single-faced sleeves used to package electric light bulbs. A. D. Tuck, plant manager, said Hankins was the only manufacturer of this type container in the United States. Production from the Little Rock plant goes to the Westinghouse Lamp Plant at Little Rock and to General Electric Corp. plants at St. Louis and Jackson, Miss.

Nashua Announces Three Changes

Karl R. Hines, Jr., divisional sales manager and a director of Nashua Corp., has been elected vice president and general manager of Nashua (Canada) Ltd., a subsidiary. He will assume his new position on October 1 upon the retirement of Hugh M. Niven, the present general manager.

The Canadian plant is located at Peterborough, Ontario. Mr. Hines will continue to serve on the Board of Directors of Nashua Corp.

Early in his career Mr. Hines was employed by Package Paper Co. of Holyoke, Mass., which was purchased by Nashua in 1935. He is a former director and vice president of the National Flexible Packaging Assn.

Sherman S. Woodward has been appointed sales representative for Nashua's Converter Division in New York City, Connecticut and southeastern New Jersey. His experience in cellophane and foil converter sales and in prepackaging of consumer items includes five years sales representative for H. D. Catty Corp.

Nashua also announced promotion of William L. Reeves to the post of sales representative of its Flexible Packaging Division in the Philadelphia and southeastern Pennsylvania area. For the past three years he has served as sales service representative for Nashua and two years previous he worked in Nashua's product development.

Kieckhefer-Eddy May Build Plant in Houston

Officials of the Kieckhefer-Eddy Division of Weyerhaeuser Timber Co. are checking plant sites in the Houston, Texas area for a $3 million plant.

One of the company officials said that seven-acre to ten-acre sites with trackage are being considered for the erection of a plant to contain approximately 150,000 sq. ft.

The proposed plant would manufacture corrugated containers.

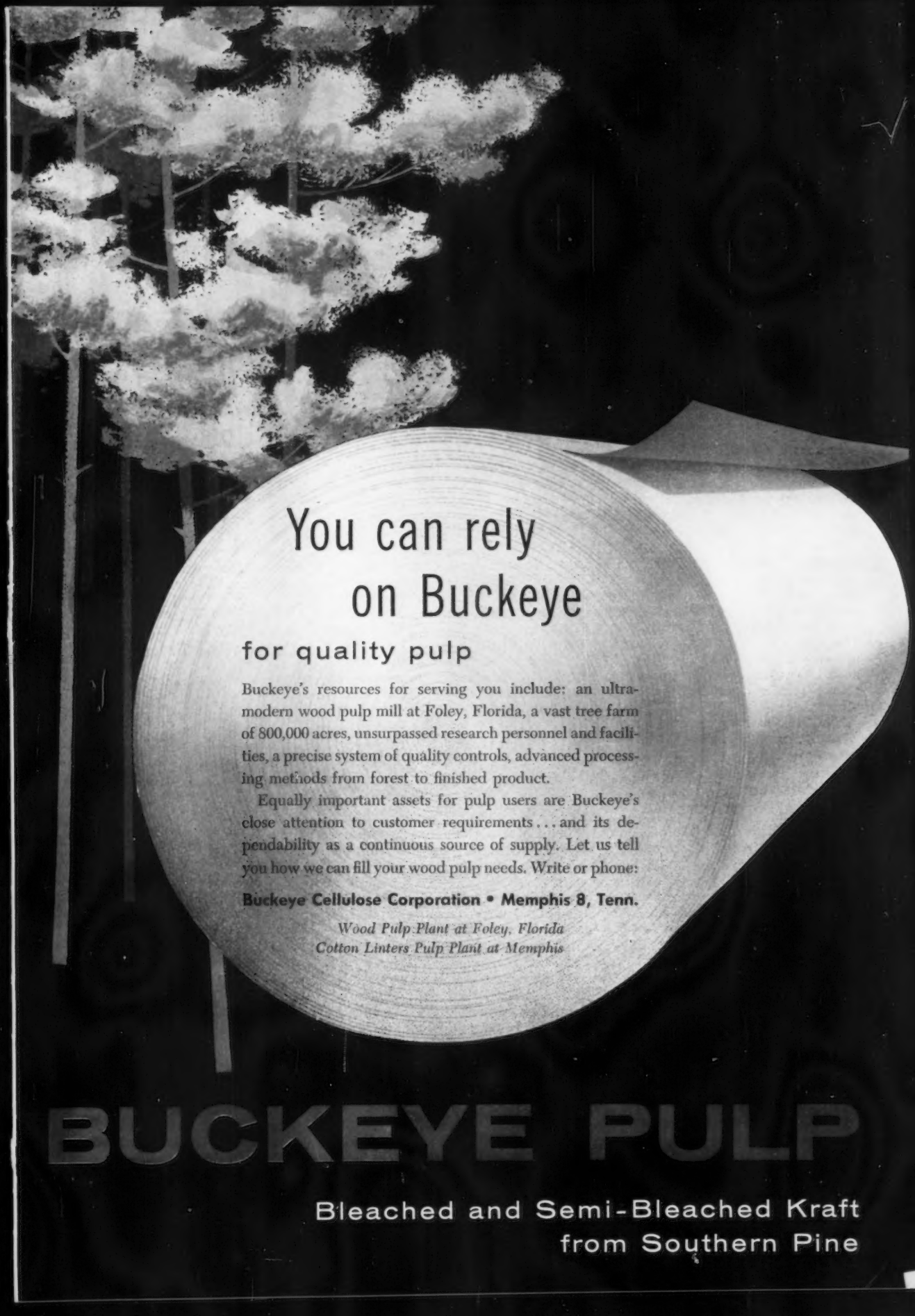
Guest Speaker for Plastics Conference

"The impact of packaging on modern merchandising," will be the subject discussed by Carl J. Reith, vice president of Kroger Co., who will be the guest speaker at the luncheon being held on October 8, in conjunction with the twelfth annual TAPPI Plastics-Paper Conference at the Sheraton-Gibson Hotel in Cincinnati, Ohio.

Mr. Reith's talk will highlight activities scheduled for the second of the three-day conference, which will begin on Monday, October 7, and conclude on Wednesday, October 9. His talk will point out how packaging can help the retailers by combining visual appeal with convenience and protection. Mr. Reith will cite specific examples where new packaging alone has increased sales products, and will tell how product presentation has been glamorized by the use of packaging material adapted to the product.

Schermerhorn Alters Name

The name of Cutler & Schermerhorn, Inc. of Chicopee, Mass. has been changed to Schermerhorn & Sons, Inc. The paper-box manufacturers said that the change was in name only and manufacturing facilities and company policy remained unaffected.


You can rely
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for quality pulp
Buckeye's resources for serving you include: an ultra-modern wood pulp mill at Foley, Florida, a vast tree farm of 800,000 acres, unsurpassed research personnel and facilities, a precise system of quality controls, advanced processing methods from forest to finished product.
Equally important assets for pulp users are Buckeye's close attention to customer requirements . . . and its dependability as a continuous source of supply. Let us tell you how we can fill your wood pulp needs. Write or phone:
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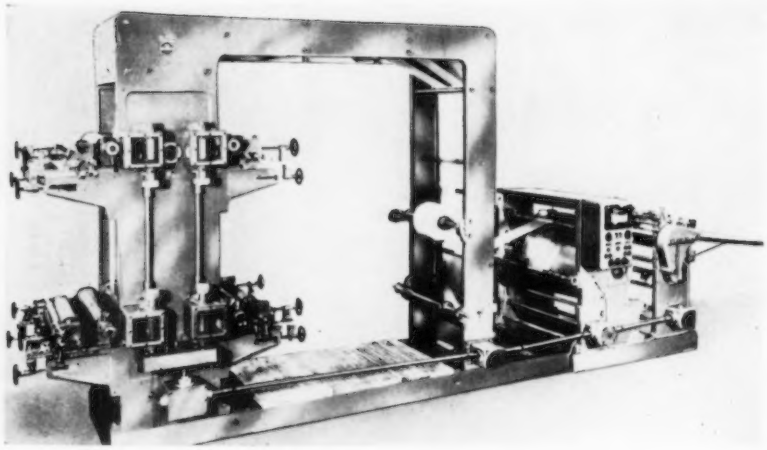
Wood Pulp Plant at Foley, Florida
Cotton Linters Pulp Plant at Memphis
BUCKEYE PULP
Bleached and Semi-Bleached Kraft
from Southern Pine



Italian Flexo Printer and Bagmaker Introduced

Parsons & Whittemore Graphic Corp. has been appointed exclusive U. S. distributor for the "Kleina-Rotoplast" combination multicolor flexographic press and bagmaker, made by the Bielloni Co., Milan, Italy.

The "Kleina" press prints paper, cellophane, polyethylene and other flexible materials in 2, 3 or 4 colors at speeds up to 325 f.p.m. It is made in three widths: 15¾", 17⅝" and 19⅝"; has a repeat range from 9½" to 31½". The press may be used for roll-to-roll operation as well as inline with the bagmaker. Optional equipment includes a reverse printing attachment for back-printing.

The "Rotoplast" bag machine, made in widths of 11 13/16" and 19⅝", is an automatic roll-fed unit that cuts and heatseals either flat or gusseted thermoplastic tubing. It makes bags from 4¾" to 31½" long at speeds up to 10,000 to 12,000 per hour for the smallest size to 2500 per hour for the largest size. A two-up attachment, which will double the above production figures, is also available. The machine incorporates a strip type-sealer, controlled by self-regulating pyrometer, and a dual-bar anti-static device.

Complete details on the "Kleina-Rotoplast" printer and bagmaker are available from Parsons & Whittemore Graphic Corporation, 250 Park Avenue, New York 17, N. Y.

Knoxville Box Enlarges Warehouse

Knoxville Paper Box Co. obtained a city building permit to construct a second-story addition over a warehouse at its plant at 200 Magnolia Avenue, Knoxville, Tenn. Cost was given as $32.846.

The additional floor, which will be used for storage, will be of steel frame, brick and cement block construction. Size is 60 by 140 ft. Work is under way by the contractor, Daugherty and Waters.

Allen Carton Plant Nears Competion

The W. H. Allen Cartons Co. plant located at Jacksonville, Fla. is nearing completion. With 20,000 sq. ft. of floor space, it will manufacture lightweight cartons for frozen foods, groceries and bakery products.

Neutral Paint Developed For Color-Testing

Sun Chemical Corp. has developed a completely neutral grey paint for use in printing plants and laboratories where color tests are being conducted. The new paint, called "Graphic Arts China-Luxe Grey," resulted from joint studies by two Sun Chemical divisions, the General Printing Ink Co. and A. C. Horn Co., Inc.

When measured spectrophotometrically, surfaces finished with the new paint show virtually linear response to all wavelengths in the visible spectrum. For this reason distortion of a color under observation is held to an absolute minimum. The overall reflectance has been established at approximately 60 percent.

"Graphic Arts China-Luxe Grey" is available in three finishes—flat, semi-gloss and enamel—so that walls, trim and equipment may be covered with the appropriate reflective surface.

Minne Gets New Milprint Post

Gerald M. Minne has been named assistant manager of plant operations of the 11 plants operated by Milprint, Inc., Milwaukee. Mr. Minne has been manager of Milprint's De Pere, Wis., converting plant.

Eugene A. Antisdel, formerly plant superintendent at De Pere, succeeds Mr. Minne as manager, and Paul G. Hayden, who has been assistant to the plant superintendent, becomes plant superintendent.

Nat. Envelope Appoints Sales Manager

Richard W. Gledhill has been appointed vice president and general sales manager, National Envelope Corp., San Francisco. He joined the company in 1944 and served for the past five years as sales manager.

Graham Named to Cont. Diamond Post

Continental-Diamond Fibre Corp.'s Newark, Del. plant, has appointed William J. Graham as supervisor of the personnel department. He joined Continental-Diamond in 1956.

Correction Please

July 29, 1957

Gentlemen:

In the July 15 issue of *Paper Trade Journal* there appeared on page 35 a news item regarding litigation between National Container and Monroe Paper Products of Monroe, Michigan. For your information this action is between the Waterbury Corrugated Container Co. and Monroe Paper Products.

To the best of our knowledge National Container has had no interest with Monroe since September of 1953. We would appreciate your issuing a correction of this news item.

Yours truly,

J. P. Kinsey
Waterbury Corrugated
Container Company

W. Va. Names Distributors

West Virgina Pulp and Paper Co. has appointed Baldwin Paper Co., Inc., and Cross Siclare & Sons, Inc., as New York City distributors of its Westvaco grades of business papers.

4,000 years B. C., slices of papyrus stalk were laboriously pressed into sheets that retained writing—so the world learned a new word: paper. Then some now-forgotten Egyptian devised a wooden roller (above) that pressed papyrus into smoother sheets, at lower cost. Result: the increased market multiplied an art into an industry.

Another milestone in paper progress: Dow Latex 512-R

Now this effective pigment binder improves dimensional stability and water resistance in coated papers—and contributes to sharper printing with fracture-free folding. Result: the highest quality coated stock with important economies. For the full story, see your Dow man. THE DOW CHEMICAL COMPANY, Midland, Michigan.

YOU CAN DEPEND ON DOW

PAPER PEOPLE

Patrick J. Noel

Richard A. Yanka

Promotion at Wausau

Wausau Paper Mills Co., Brokaw, Wis., has appointed Patrick J. Noel superintendent of its finishing, shipping, and customer service. Mr. Noel was formerly with the W. A. Krueger Co. of Milwaukee. He has been Wausau's sales-service coordinator since 1954.

Scott Promotes Three At Mobile Plant

Henry L. Moncrief was promoted to chief electrician at the Mobile, Ala. division of Scott Paper Co. recently. He replaces E. L. Bushell who has retired.

Mr. Moncrief joined the firm's electrical department in 1940 and served as assistant chief of electricity from 1947 until his latest promotion.

Promotions were also announced for John T. Pitman Jr. and Dennis C. Breen to finishing supervisors in the kraft finishing department of Scott's Mobile plant.

Hoppe Named Head of New M & O Department

Gerald F. Hoppe has been appointed manager of the newly established advertising and promotion department of the Minnesota and Ontario Paper Co. and Ralph H. Rodlun has been promoted to assistant manager.

William G. Reker has resigned his position as Mando's advertising manager to join Mullen and Associates, Inc., a Minneapolis advertising agency.

Before his promotion, Mr. Hoppe was sales promotion manager for Mando's Insulite sales division. Mr. Rodlun was assistant advertising manager.

Joins Fitchburg Staff

Richard A. Yanka has joined the research staff of Fitchburg Paper Co., Fitchburg, Mass. He has been employed by American Maize Products Co., Hammond, Ind. for the past nine years.

Allied Paper Promotes Stetz

Stanley Stetz, Bryant mill waste paper conversion superintendent, has been promoted to the newly-established position of superintendent of waste paper conversion for the Kalamazoo, Mich., mills of the Allied Paper Corp. He will directly supervise the overall operations of the King, Monarch and Bryant waste paper conversion mills.

Mr. Stetz has been an employee of the company since 1946. He previously held the positions of assistant superintendent and tour foreman at the Bryant conversion mill. He also served as president of the Bryant mill Local Union 426 for several years.

Three Promoted at Brown Pulp Division

Three promotions in the pulp manufacturing division have been announced by Brown Co., Berlin, N. H. Nazaire Metivier has been named acting assistant sulphite superintendent and has been assigned as the operating supervisor in charge of the sulphite recovery plant; Robert McKee has been promoted to acting assistant kraft superintendent, and Robert Bonsall has been named technical control supervisor of the kraft mill.

Peterson Named M & O Plant Engineer

W. T. Peterson has been appointed plant engineer of the Minnesota and Ontario Paper Co.'s specialty paper and Insulite fiber board plant in International Falls, Minn. He will report to E. R. Gustafson, resident engineer, and will be responsible for plant and equipment maintenance, engineering methods, maintenance scheduling and equipment purchases.

Before joining Mando in 1952, Mr. Peterson was a research fellow at the University of Minnesota where he conducted research programs for industrial and governmental agencies on building material products.

Consolidated Adds Staff

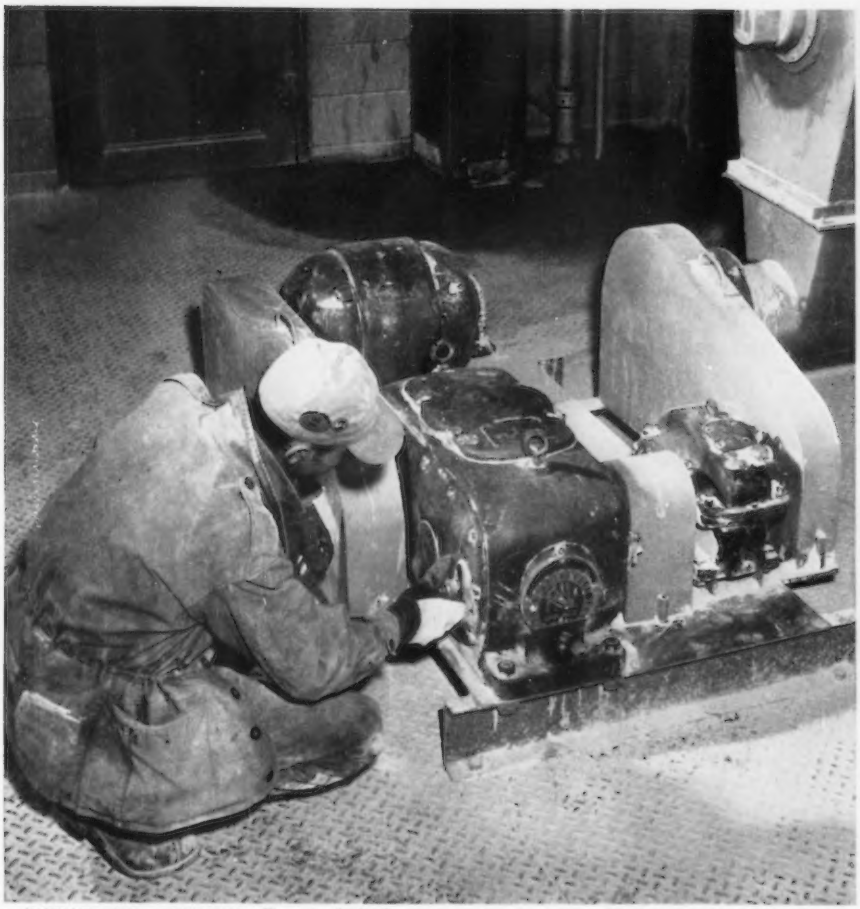
Duane C. Smith has joined the personnel and labor relations department of Consolidated Water Power & Paper Co., Wisconsin Rapids. A former Madison, Wis., teacher, he will serve as an administrative assistant in the department.

F. B. Schelhorn

O-I Mill Division Elects Manufacturing V-P

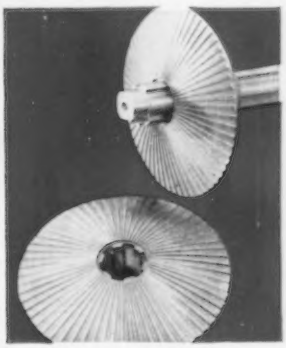
The election of Frederick B. Schelhorn as manufacturing vice president for the Mill Division of Owens-Illinois Glass Co. has been announced by C. G. McLaren, vice president and general manager of the mills and woodlands.

Dr. Schelhorn had been mill coordinator for the Mill Division since he joined Owens-Illinois last October with the merger of National Container Corp. into the company. He was plant manager at Jacksonville, Fla. for National Container until named a vice president in 1956.



INSTANT SPEED CHANGING. To get desired output rpm, operator simply turns handwheel to desired position on easy-to-read dial. P.I.V. responds instantly, accurately. Drives are also available with automatic, electric, pneumatic or hydraulic controls.

SELF TOOTH-FORMING CHAIN consists of a series of steel laminations, serving as teeth, which are free to move from side to side, either singly or collectively.



RADIALLY GROOVED WHEELS have teeth cut at constant depth but of increasing width toward wheel periphery. Beveled sides of teeth provide gripping surfaces for chain.

Slipless transmission - - stepless selection

That's because LINK-BELT P.I.V. uses self-tooth-forming chain

LINK-BELT P.I.V.—unlike other variable speed drives—incorporates an exclusive metal, self-tooth-forming chain to give you instant, positive speed variation, regardless of load. This unique drive permits infinitely variable speed changes without loss of accuracy or interruption of operations. That's why P.I.V. is all industry's choice for jobs requiring stepless, slipless power transmission.

Changing speed is simple too. A turn of the control screw simultaneously varies the effective diameters of two sets of conically shaped wheels—closing one set, spreading the other. At the same time, the self tooth-forming chain automatically adjusts to provide desired ratio between the input and output shafts.

Link-Belt P.I.V. drives are fully enclosed for trouble-free operation. They're splash-lubricated for long life—unaffected by atmospheric conditions. Choose from 8 sizes in 16 standard types, with the aid of Book 2274. Call your nearby Link-Belt office or authorized stock-carrying distributor for complete information. 14,314

LINK-BELT P.I.V. VARIABLE SPEED DRIVE

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World.

James Kudrna

H. J. Dyer

the paper container industry, has been with Owens-Illinois since 1956. He formerly was employed by St. Regis Paper Co. and Chase Bag Co.

Mr. Kudrna has been in the paper industry since 1919. He was with Jaite Co. until 1951, and then with National Container Corp. until last year, when that company was merged into Owens-Illinois.

Mr. Grayson also came with Owens-Illinois from National Container. He has had 19 years experience in the paper bag industry, joining National Container in 1954.

Meet Huyck's
"PETE"

As Manager of Huyck's Field Service Engineers, Irving Peters heads the largest, best-trained engineering service staff in the felt industry. A graduate of the Department of Pulp and Paper Technology at Syracuse University, and recognized as the foremost authority on felt application, "Pete" and his staff offer service to every paper mill in the United States.

HUYCK FELTS

First in Quality . . . First in Service Since 1870

Albert S. Grayson Jr.

O-I Multiwall Names Plant Managers

Three appointments as plant managers have been announced by Multiwall Bag Division of Owens - Illinois Glass Co.

Howard J. Dyer was named manager of the multiwall bag plant at Jaite, Ohio, and James Kudrna was appointed manager of the paper mill at Jaite. The third appointment was that of Albert S. Grayson, Jr., as manager of the multiwall bag plant at Valdosta, Ga.

Mr. Dyer, a veteran of 23 years in

McCain Joins W. Va. at Luke Mill

William S. McCain has joined the staff of the Luke, Md. mill of West Virginia Pulp and Paper Co. as labor relations assistant to the personnel manager, Dan R. Staley. He came to the Luke mill from International Paper Co.'s Southern Kraft Division headquarters in Mobile where he was engaged in all phases of labor relations activity covering International's nine southern mills.

New Flintkote Researcher

Flintkote Co. has named Dr. Arnold J. Hoiberg assistant research director.

Robert S. Howard

Wausau Promotes Technical Ass't

Wausau Paper Mills at Brokaw, Wis. has promoted Robert S. Howard to technical assistant to the paper mill superintendent.

Mr. Howard has spent six years in pulp and paper research at the Institute of Paper Chemistry at Appleton, Wis. He was also associated with the Hudson Pulp and Paper Corp. of Palatka, Fla. He has been a process engineer with Wausau since June, 1954.

Alvin H. Johnson & Co.

INCORPORATED

Consulting and Designing Paper Mill Engineers

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PAPER MILL DESIGN PROCESS ENGINEERING POWER PLANTS

STRUCTURAL AND ARCHITECTURAL DESIGN

REPORTS APPRAISALS ESTIMATES AND SURVEYS

BOWATERS SOUTHERN PAPER CORPORATION. PHOTO BY J. W. MILLER

Beloit Heavy-Duty Pneumatic Reel A Beloit pneumatic reel makes possible continuous reeling at high speeds, since a new spool is "ready to go" at all times. Density of the parent roll is constantly under control. For other details and advantages, please see following page.

BELOIT HEAVY-DUTY PNEUMATIC REEL

. . . continuous reeling at high speeds. Delicate control of nip pressure throughout the building of a reel.

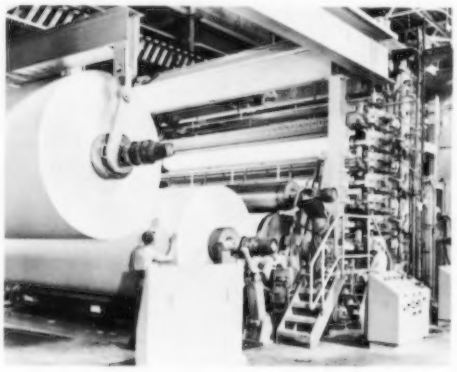
The Beloit Heavy-Duty Pneumatic Reel makes possible continuous reeling at high speeds, producing rolls of uniform density up to "jumbo size" – 96 inches in diameter.

Beloit reels are engineered for the finest possible service and performance. The reel spool, held in the pneumatically loaded primary arms, is brought to drum speed before transfer of the sheet, providing good tight starts without "spool bounce" or paper loss. The smooth rotation of the roll from primary to secondary reeling position is achieved by a simple motor drive. As soon as the winding reel of paper is transferred from the primary to secondary position, the primary arms quickly return to starting position so that a new spool can be placed and ready for the next roll.

Pneumatically loaded primary and secondary arms, level secondary ways, and cross shaft arrangement provide delicate control of nip pressure throughout the building of a reel.

Maintenance is reduced to a minimum by simplified design and rugged construction. There are no complex gear trains for either primary or secondary arms.

The Beloit designed benchboard provides the operator with simplified convenient controls. There is a Beloit reel designed for every reeling operation – assuring parent rolls of controlled, uniform density for transfer to the unwind stand.



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WHEN YOU BUY BELOIT...YOU BUY MORE THAN A MACHINE

Wood as a Raw Material for Groundwood Pulp

Dr. K. H. Klemm

Manager, München Dachauer Papier Fabriken, Munich, Germany

(Preparation of English text by G. P. Chinn, Control Supt., Anglo-Newfoundland Development Co., Grand Falls, Nfld.)

The basic difficulties with groundwood production are related partially to the organic nature of the raw material (wood) and partially to the limitations of the equipment used. It should be mentioned here that better quality pulpwood is required for mechanical than for chemical pulping. With the former, the wood is fed in blocks to the grinding zone where the uniformity of growth and percentage of knots can have as much effect on the pulp produced as the density and fiber quality. For chemical pulping the uniformity of the original block is not important as the wood is cut into chips and therefore the natural fluctuations are leveled out. Thus, where possible the best wood should always be selected for the groundwood mill.

The chemical and physical structure of wood is reviewed in this chapter only in sufficient detail to permit a general understanding of this raw material. For more complete information, a study of the literature given at the end of this section is recommended.

This is the second in an extended series of articles on groundwood manufacture. Readers who are bothered by the highly technical nature of this article should bear with the author, as forthcoming articles are of a more practical nature.

Heterogeneity of Wood

A definite knowledge of the structure and morphology of wood exists. However, the practical application of this knowledge has only been worked out for the field of chemical pulping (1) despite the fact that for groundwood production the properties of the wood are of much greater importance. It is only recently that the author (2) developed a concept for the grinding process which accounts for the physical properties of the wood. In the following, a short review on the structure of wood is given with special regard to the requirements for groundwood production.

Chemical Composition of Wood

The basic chemical components in the wood are the cellulose, the lignin and a complex of substances called hemicellulose. All these are naturally produced and because of their intricate physical and chemical linkages, resist correct chemical analysis and sometimes even identification.

The pure cellulose is a crystalline substance built from similar cells. The cells themselves are constructed from chains of glucose anhydride which may be called the molecules of cellulose (see Figure 1). Based on the effect of primary and secondary valence forces, the so-called cellulose crystals are made up from a large number of these cells. These are inclined to build still larger spindle-like single units, the crystalline nature of which is indicated by double refraction. From these basic elements, fibrils (about 0.1 to 1.0 microns thick and detectable by microscopic means) are built.* The wood fibers are formed like a hollow cylinder from several layers of fibrils which are assembled spi-

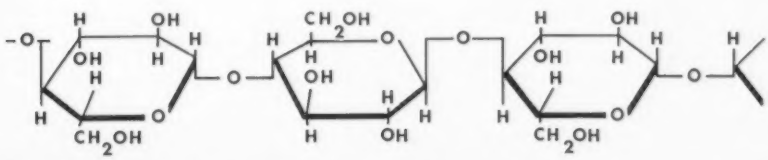

FIGURE 1—Cellulose (according to Haworth)

* To make it easier to get a picture of the size of the wood components, the following definitions may be helpful:

10Å = 1 millimicron = 0.001 micron = 0.000,001 mm.
Limit of visibility in the normal microscope—5000 Å
Limit of visibility with an electron microscope—10Å
Size of inorganic molecules—smaller than 10Å
Size of molecules of colloids—10 to 1000Å

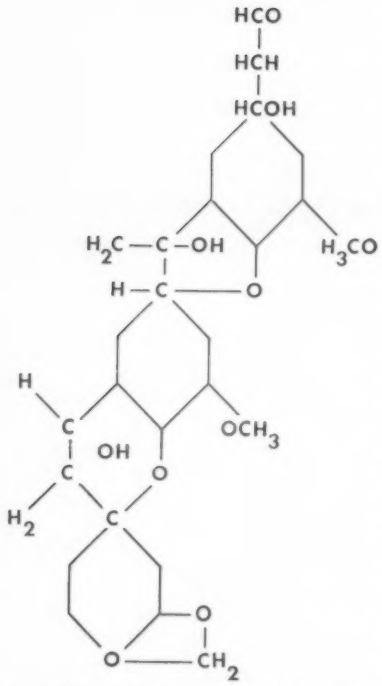

FIGURE 2—Native Lignin (according to Freudenberg)

rally to the fiber axis and have a length of about 230 microns (3). With the electron microscope it was detected that the natural cellulose in the fibrils has periodic disruptions which can be hydrolized easily by acids. The distance between these interruptions is equivalent to the length of 500 glucose molecules. Obviously these are amorphous sections of isolated micelles. The analysis for the percentage of cellulose in wood is done by conventional methods based on the solubility of cellulose in alkali solutions.

To date, there are no commonly accepted concepts for the structure of lignin. Most probably the natural lignin, called native lignin, is a polymer substance with a molecular weight as low as 840 and from this, during isolation, a lignin of higher form is built. For native lignin Freudenberg gives the formula shown in Figure 2, which, however, is not totally adequate to account for all its chemical properties. The lignin in the wood is partially interconnected with carbohydrates. The free lignin probably is identical to the native lignin and is especially prevalent in the medium lamella between the wood fibers. In the peripheral layers of the cell wall, the lignin has bonds to the carbohydrates. The isolation of lignin requires the application of acids or alkalis (3). The observation that the native lignin can be plasticized and the interconnected lignin reactivated by heat has been of great importance to the industries using wood as a raw material (5). The bonds between lignin and carbohydrates can be loosened by a steam treatment at temperatures between 320°F and 360°F. The thermoplastic properties of the wood fibers together with the activation of the lignin seem to be of special significance during the grinding of wood. The determination of the lignin content of wood is based on its insolubility in concentrated inorganic acids.

The hemicellulose represents the third important fraction of the wood. This term does not define a single chemical substance but includes all carbohydrates and derivatives of carbohydrates which have not the structure of cellulose. Among them are polymer structures of hexoses (e.g. mannan and galatan) and pentoses (e.g. xylose and arabinose), derivatives of these sugars (e.g. methylpentosan) and mixtures of pentoses and hexoses (e.g. gluco-xylan) as well as oxidation products of the sugars (e.g. uronic acid). Basically, the hexoses are constructed on the pyran cycle and the pentoses on the furan cycle. For example, furfural is derived from the xylan by anhydration according to the formula given in Figure 3.

The percentage of hemicellulose in wood is determined by conventional methods of analysis based on the fact that these compounds are easily dissolved in alkaline solutions of low concentration (3).

Other components of wood, all less important, are: resins, turpentines, fats, nitrated compounds (e.g. tannin) and coloring materials. Analytically, they are usually characterized as "soluble in organic solvents." Besides these, the wood contains a certain amount of inorganic materials which account for its ash content.

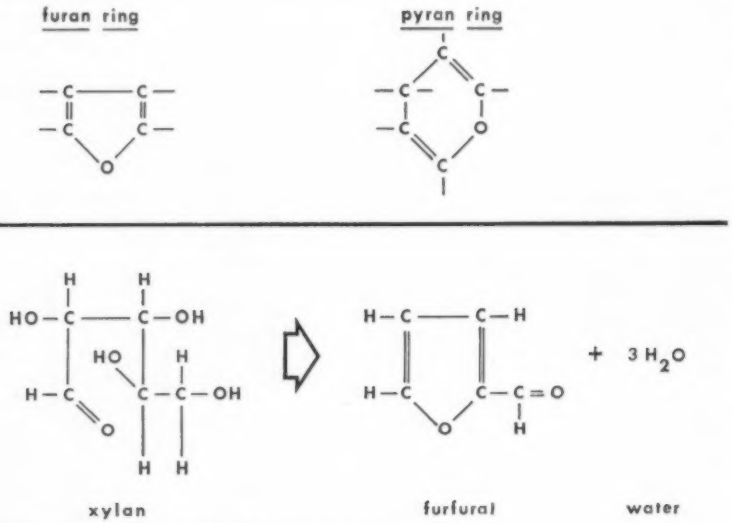

FIGURE 3—Furfural is derived from xylan by anhydration.

TABLE I—AVERAGE CHARACTERISTIC DATA OF THE MOST IMPORTANT WOOD SPECIES USED FOR GROUNDWOOD PRODUCTION

		Spruce	Pine	Balsam Fir	Western Hemlock	Poplar	Birch	Beech
Soluble in hot water	%	2.6	3.0	4.0	3.0	2.9	2.0	1.3
Soluble in alcohol-benzene	%	2.0	4.0	—	—	2.8	1.4	1.1
Pentosan (hemicellulose)	%	12.1	14.0	11.0	9.0	21.8	26.9	25.1
Lignin	%	29.2	27.0	29.0	30.0	21.9	19.4	21.4
Cellulose	%	42.0	42.2	42.0	43.0	52.1	45.0	45.0
Density	g (o.d.)/cm³	0.415	0.480	0.340	0.380	0.380	0.560	0.560
Fiber Length	mm.	3.2	3.4	4.0	3.5	1.05	1.85	1.2
Fiber Diameter	micron	24-34	28-42	28-40	28-40	10-27	20-36	16-22

Jayme (5) has given a schematic diagram for the distribution of the basic constituents of wood. However, the analytical work of different researchers shows that the chemical composition of wood depends not only upon the species but also upon its age and the climatic conditions at the place of growth. Besides this, there can be great natural variations even within the same tree.

The average chemical composition of the most important wood species used for groundwood production is given in Table I. On the average, softwoods show a higher lignin and a lower hemicellulose content than the hardwoods while there are only small differences in the percentage of cellulose.

There is no doubt that neither the cellulose nor the lignin content of wood have a characteristic value, each vary according to the climatic conditions at the place of growth and the mineral composition of the ground. Sunshine and high temperatures have the effect of increasing the percentage of lignin which, therefore, decreases with increasing height above sealevel. Trendelenburg (6) determined by analysis the lignin content of spruce to be 29.8 percent when grown at 500 feet, and 26.0 percent at 4400 feet above sealevel.

The chemical composition varies within the different parts of a single tree. Schwalbe and Becker found that the hemicellulose decreases with increasing age whereas cellulose and lignin increase. The compression wood of spruce has a lignin content of 30-35 percent while it is only 27-28 percent in the tension wood (from the upper side of branches). Compression wood has a relatively low cellulose content (35 percent). Hägglund (7) analyzed for hemicellulose at different heights of the bole and found an increasing percentage with increasing height.

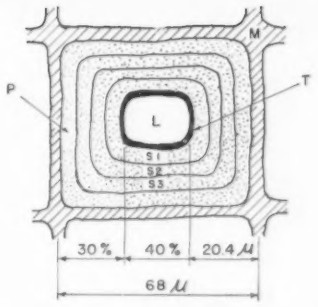

FIGURE 4—CROSS SECTION OF A WOOD FIBER

L Lumen; T Tertiary Lamella; S Secondary Lamella; (S_1 Inside; S_2 Medium; S_3 Outside); P Primary Lamella; M Medium Lamella.

Even at the same cross section the wood at the periphery always shows a higher cellulose and lignin content than that in the center. These variations come right down to the growth ring level where the summerwood has a higher cellulose and lower lignin, hemicellulose and resin content than the springwood. This can be related to the fact that the secondary layer of the cell wall, which is predominantly cellulose, is relatively thin in the springwood but very thick in the summerwood.

The wood rays have an especially high lignin content. In their case the primary cell wall is very thick while the secondary is almost entirely missing. Bailey determined the lignin content of the different fibers in Douglas fir to be:

Medium lamella	71.4%
Wood rays	41.1
Springwood fibers	35.2
Summerwood fibers	31.6

The degree of lignification can be easily determined by applying chemical solvents below the covering glass of microtone cross sections of wood. This dissolves the cellulose and leaves the residual lignin structure. Unfortunately this method gives no numerical values but, as chemical analysis is practically impossible because of the difficulty in separating the individual fiber types, it is a convenient way of showing the variations in the lignin content between them. Micro-photos of this kind made by Jayme and Kober show that the lignin distribution in the different layers of the cell wall varies considerably as does the thickness of the medium lamella.

Micro-Structure of the Wood Fiber

The cell wall surrounding the lumen represents the wood fibers. Its length is dependent upon the wood species and may range up to 4 millimeters. The ratio of length to thickness is about 60 to 1 (see Table 1). The cell wall which surrounds the lumen is built up from several layers (lamellae) containing the fibrils. These elementary particles are held together, partially by chemical bonds and partially by the gluing action of the intermixed lignin. A cross section through a single fiber indicates that the lamellae are built up from up to eight layers of fibrils. The lamellae are located like bands around the lumen. Various researchers have found that the lamella bands are arranged with different angles to the

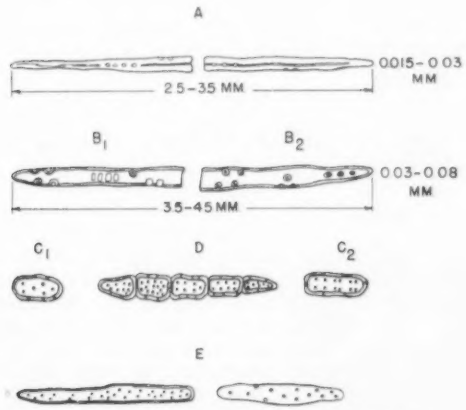

FIGURE 5—CHARACTERTISTIC FIBERS OF SOFTWOODS

A Tracheid of Summerwood; B Tracheid of Springwood; (B_1 Pine; B_2 Fir); C Parenchyma Fiber; (C_1 Fir; C_2 Spruce); D Ray Cell; E Cells built from Parenchyma Fibers.

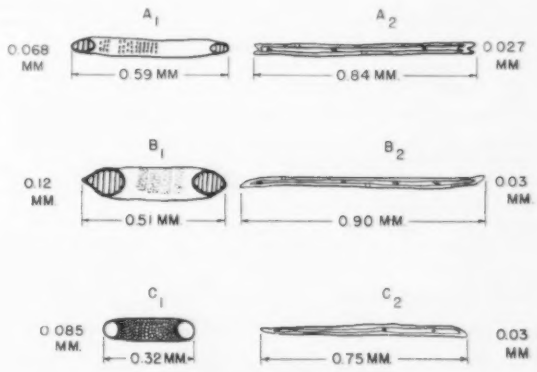

FIGURE 6—CHARACTERTISTIC FIBERS OF HARDWOODS

A_1 Vessel; A_2 Libriform Cell of Birch
B_1 Vessel; B_2 Libriform Cell of Poplar
C_1 Vessel; C_2 Libriform Cell of Maple.

TABLE II—PERCENTAGE* AND DIMENSIONS OF THE DIFFERENT FIBER TYPES IN WOOD
(according to Kollmann)

	Types of Fiber					
	Tracheids			Libriform	Parenchyma	Ray
	Springwood	Summerwood	Vessels	Fibers	Cells	Cells
Softwoods						
Minimum	87	87			1	4
Normal	91	91			1.5	6
Maximum	95	95			2	10
Hardwoods						
Minimum			5	26	3	6
Normal			20	49	13	18
Maximum			58	78	21	28
Dimensional Limits (microns)						
Radial Diameter	10-60	3-30	10-300	1.2-8.5	5.0-50	5.0-50
Tangential Diameter	10-50	10-40	12-400	1.2-8.5	5.0-50	5.0-50
Thickness of Cell Wall	2.0-6.0	2.0-6.0	1.6-3.0	3.0-6.5	2.0-4.5	2.0-4.5
Fiber Length	700-11,000			200-6000	20-100	20-100

* Based on wood volume.

fiber axis. For example the fibrils of the fibers from the periphery of the tree (especially subjected to tension) are arranged parallel to the axis whereas in cases where compression is prevailing, they are arranged at right angles to the axis. The spiral structure holds in the fibers which are subjected to both tension and compression. In general, it can be said that the arrangement of the fibrils is parallel to the tension forces and at right angles to the compression forces.

The structure of wood is shown schematically in Figure 4. The fibers are enclosed against the lumen by a thin skin which is called the tertiary lamella. It is built from a substance which, as yet, has not been identified analytically. The following secondary layer which is responsible for the high tensile strength of the fibers, contains the cellulose crystalloids arranged in fibrils. Between the fibrils polyoses, hemicellulose and lignin are present in percentages increasing towards the periphery. There is no distinct dividing line between this and the primary layer which contains mostly hemicellulose and lignin. The lignin content increases in the direction towards the outside of the fiber more and more until the medium lamella is reached. Again the boundary is very indistinct. The medium lamella is built up chiefly from lignin and represents the substance between the fibers which glues them together.

All the concepts related to the microstructure of the wood are more or less schematic. Only the typical arrangement can be described whereas the variations used by nature are manifold.

Biological Structure of Wood

Up to this point chemical terms could be used to describe the structure of wood; now its biological make-up must be employed. Basically, the wood has a solid organic structure, the elements of which are hollow, crystalline cells connected to each other by an amorphous substance represented by the medium lamella. The single fibers are not identical but vary with the wood species, each of which has certain characteristic types (10) (11).

The softwoods contain chiefly tracheids, parenchyma cells and ray cells (Figure 5). The tracheids form the highest percentage of the substance and have the tasks both to give the wood its strength and to provide for the transport of food in the longitudinal direction of the tree. The radially arranged ray cells permit the distribution of the food at right angles to the axis. The individual fibers are interconnected by the so-called pits which divide the total height of the tree into an indefinite number of very small height levels. This mechanism explains the transportation of food from the ground to the uppermost part of the tree. In summerwood, the number of pits is low, reflecting the lower food requirements of the tree during this period of growth.

In contrast to the softwoods, in hardwoods the physiological functions of the different fibers are separated. The libriform fibers have only the task of giving the wood strength while transport of the food is through the vessels (Figure 6).

As with softwoods, the parenchyma and ray cells provide for the distribution of the food over the cross section of the tree.

Table II shows the distribution of the various fiber types with different wood species as a percentage of the wood substance. The limits for the fiber dimensions are also given.

Both the distribution of the fiber types and their dimensions in the different parts of the tree are subject to variations. With softwoods, as the seasons change from spring to autumn, progressively shorter and thinner fibers with correspondingly thicker cell walls are built. Accordingly, the fiber dimensions within one annual ring are very different as shown in Table III.

These distinct variations within the cross section of a wood block, from the less dense, brighter springwood to the denser and darker summerwood account for the occurrence of the annual rings (Figure 7). The fiber dimensions vary also with the height and the distance from the center of the tree. Hoffman (11) and Klein (12) found that the greatest average fiber length occurs at a medium height in the tree and decreases in both directions, towards the top and towards the root. The maximum average fiber length in a 100 year old spruce tree was 3.55 mm. at a height of 15.7 feet;

TABLE III—THE DIFFERENCES IN FIBER DIMENSIONS OF SPRINGWOOD AND SUMMERWOOD FOR SPRUCE

	Length (micron)	Diameter (micron)	Thickness of Cell Wall (micron)
Springwood	3500-4500	30-80	2-3
Summerwood	2500-3500	15-30	5-8

in an 80 year old pine it was 4.4 mm. at 20.3 feet. In the cross section, the fiber length increases with increasing distance from the center (e.g. in the above-mentioned trees, it was 0.85 mm. in the center and 3.8 mm. at the periphery at a height of 3 feet for the spruce and 0.95 mm. in the center and 4.2 mm. at the periphery at a height of 29 feet for the pine). Schwalbe (14) points out that the age of the individual fibers, even in the same cross section, is very different. At the base of a tree, 100 year old fibers may be in the center while at the periphery they are only one or two years old. At a medium height this ratio may be 50:1 and, at the top, there are only very young fibers of one to ten years of age. The above facts explain the heterogeneity of wood. Figure 8 indicates the biological structure in different characteristic cross sections of softwoods.

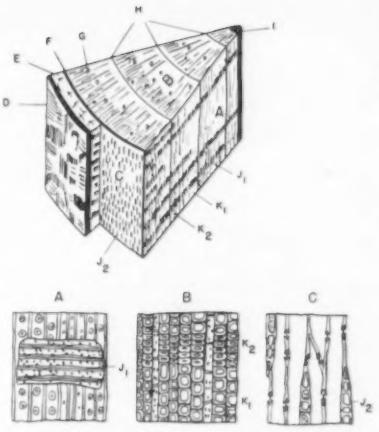

FIGURE 8—THE BIOLOGICAL STRUCTURE OF SOFTWOODS

A—Radial Section; B—Plane Section; C—Tangential Section; D—Bark; E—Inside Bark; F—Cambium; G—Resin Holes; H—Growth Rings; I—Heart; J—Ray Cells, radial; J_2—Ray Cells, tangential; K_1—Springwood; K_2—Summerwood.

Density of Wood

The heterogeneity of wood is summarily expressed by its density. This is determined by the procedure outlined in TAPPI Standard T 18. According to Schoenbach (15) the density of softwoods are in the range of 0.43 grams per cubic centimeter (27 lb./ft.^{3}) for spruce and fir and 0.49 (30.5 lb./ft.^{3}) for pine. However, it differs from log to log and can vary considerably even within the same block. The density of summerwood is greater than the springwood while that of knots and burls is much higher still (according to Niethammer, the density of knots in 0.7 g./cm.^{3} and of burls, 0.62 g./cm.^{3}). As shown in Table IV, it is also affected by the conditions during growth.

TABLE IV—DENSITY OF WOOD FROM DIFFERENT AREAS

(assembled by Niethammer 16)

Spruce Wood from:	Average Density g./cm^3
Saxony	0.452
Finland	0.442
Silesia	0.424
Czechoslovakia	0.395
Poland	0.354
Carpathia	0.343
Average	0.402

For some time it was believed that density would be a good measurement to indicate the quality of pulpwood. While it does have a direct effect on the yield, the groundwood quality is very much more influenced by other factors. The author (2) has shown that under any specific grinding condition, one of the most important of these is the average fiber diameter. Various researchers mention that wood blocks having a high percentage of springwood with its large number of thin-walled, flexible fibers should permit the production of more favorable groundwood with its related high density. Klem (17) expressed the opinion that in wood grinding, it is essential to find the happy medium which balances out the different requirements in order to achieve the most favorable product.

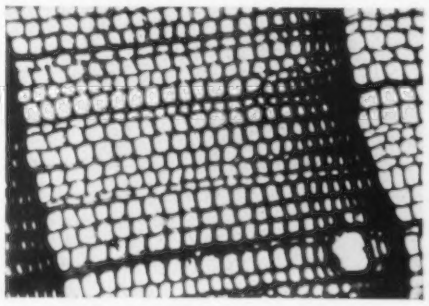

FIGURE 7—CROSS-SECTION OF SPRUCE WOOD ANNULAR RING

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West Virginia Installs Model Supercalender

Henry C. Schramm
Chief Engineer, Williamsburg Mill, West Virginia Pulp and Paper Co.

The continually changing demands of the trade for new and better printing papers makes modern high speed equipment imperative for progressive paper producing plants. For years two eight-roll supercalenders, geared for 1200 f.p.m., had been adequate for finishing "supered" paper at the Williamsburg, Pa. plant of the West Virginia Pulp and Paper Co. Modern specifications for paper type and quality indicated, however, more and better equipment was required in this department. A 122 in. ten-roll web supercalender was purchased from B. F. Perkins and Son, Inc., to meet these new paper finishing requirements. It was designed for maximum speed of 1800 f.p.m., threading speed 20/50 f.p.m., wind tension 4 lbs/in., unwind tension 5 lbs./in., and a pressure at the bottom nip of 2000 lbs. per lineal in.

Extra Heavy Frames

The rigid frames for this supercalender are extra heavy box sections of reinforced steel, welded, annealed, machined and mounted on heavy steel bases. The bases provide a large area of contact on the mass concrete foundations. These were designed to further spread the loads and thus reduce the bearing pressure on the soil.

Heavy caps and sturdy bars tie the frames together at the top. Frame gaps are wide enough to allow roll removal endwise through the frame gap. A double tee slot, running the full height on the inside face of each frame section, provides a means for fastening fly-roll bearings, platform brackets, access ladders and other calender accessories to or between the frames.

Lines Enclosed

A novel feature of the installation design provides for practically all of the hydraulic, lubrication, steam, water, air, and small electric lines to be concealed within the frames. Access openings at the bottom of the frames and inside ladders make it possible to have these parts out of the way and yet readily accessible.

All calender rolls are fitted with Timken two-row heavy duty tapered bore roller bearings mounted in enclosed housings. The slinger type labyrinth seals do not contact rotating roll journals, yet very efficiently prevent oil leakage. The housings are designed to allow at least 4 in. reduction in the diameter of the filled rolls.

Chilled iron rolls are 123 in. and the filled rolls are 122 in. at the face. The filled rolls are (top, bottom, and three bored intermediate steel rolls) respectively 18, 30, 34, and 14 in. in diameter. The steel rolls are of a hardness suitable for the required service. Both face and journals are carefully ground.

Central Oil Controls

The oil lubrication system consists of a motor driven Brown and Sharpe pump, water cooled 75 gallon oil reservoir, Stanew filter, and oil circulating lines of Bundy steel tubing and Flodar fittings. Oil lines connect to bearing housings by means of self sealing snap-on couplings which prevent oil spillage over the machine when changing rolls. All steam and water lines are attached in a similar manner. The motor, mounted on an Equipment Engineering Co. adjustable base, is fitted with a variable pitch pulley. Quantity of oil pumped may thus be regulated to required volume. This adjustment is supplemented by a valve in the pump discharge which permits bypassing or circulating oil to the storage tank. A low-pressure alarm warns the operator in case oil pressure falls below a predetermined setting. The bearing oil reservoirs will protect the bearings for a few hours after oil pressure fails.

Roll Feature

Another special feature of the calender design provides for the lifting of all stack rolls at the same time. The roll loading and lifting system consists on a 40 gallon storage reservoir, a Dudco motor driven pump, and Double-A-Valves, connected by steel tubing to the tops and bottoms of two double acting hydraulic cylinders. One cylinder is located in the cap over the frames on each side of the calender. The amount of pressure applied is determined by the position of bypass valves on the sides of the calender control desk. These in turn are readily adjustable by the calender operator. By operating other control valves at the control desk, oil may be diverted to the top or bottom of the cylinders depending upon whether pressure is to be applied or the rolls raised. During all lifting and loading operations involving the calender rolls, control is handled automatically at the control desk. When rolls are to be removed, pressure is applied to the bottom of the cylinder which raises and holds the rolls until they can be secured by a mechanical locking device. Roll removal endwise through the frame gap is accomplished through the use of roll removal equipment and two five-ton Yale rail hugger chain hoists mounted on a trolley beam.

Oscillating Lodding doctors and operators are included for each chilled iron roll.

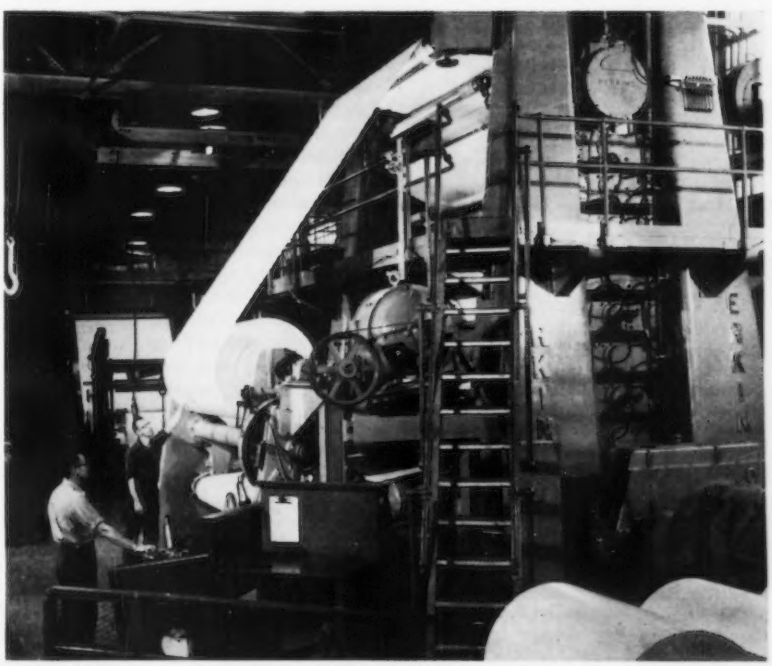
Eight 10½ in. diameter grooved fly rolls, complete with universal stands and brackets, are installed on the stacks. The supporting stands fit in the double-tee slots on the frames. Four of these rolls, two front and back, are equipped with auxiliary spreader rolls, which may be adjusted to the fly rolls. One spreader roll on a Mount Hope roll guide the paper across the top of the stack and over the top roll. A second spreader roll breaks the long draw from the reel to the Mount Hope roll. These rolls are fitted with S.K.F. sealed spherical self aligning bearings and are dynamically balanced for the proper running speed. Two 10½ in. water cooled guide rolls, which can be adjusted for varying amounts of paper contact, can also be used to cool paper leaving the bottom nip.

Safe Controls

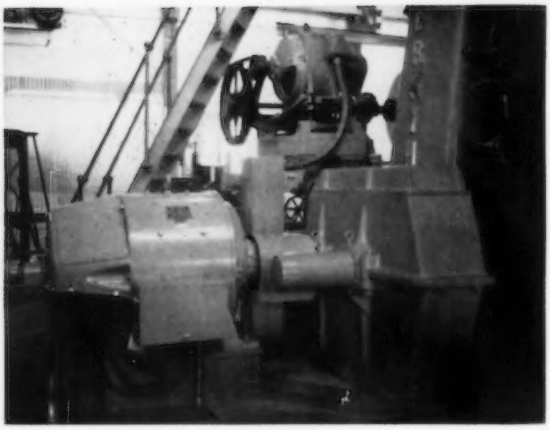
The four steam showers as well as three rotary pressure joints, stuffing box pipes, supports, six malleable ball flexible joints and brass globe valves for the bored intermediate steel rolls were supplied by the manufacturer.

Steam flows to the showers through a 2 in. Mason-Neelan single port plug air diaphragm motor powered valve. A solenoid pilot valve operated from the control desk determines the position of this steam valve, on or off. Relative quantity of steam to each shower is controlled by a globe valve in the shower steam line.

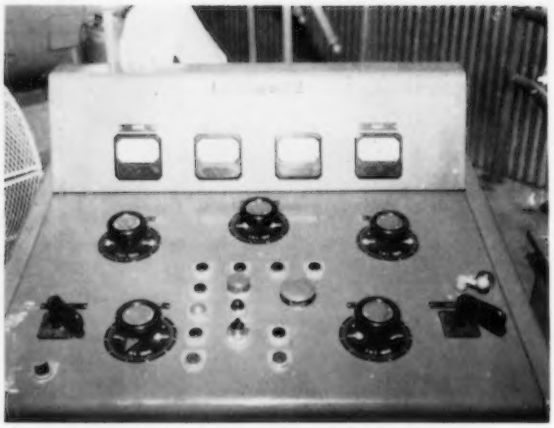
The two arm revolving reel has a capacity of a 46 in. diameter roll wound on a special Beloit 10-⅝ in. diameter by 128 in. long shaft mounted on anti-friction bearings. These shafts fit the paper machines, cutters and calenders. The reel arms are revolved by a Reliance constant speed motor driving through a Philadelphia gear reducer, a worm reducer, a spur pinion and gear. The worm drive ratio is such that under no conditions can the weight of the roll move the reel arms. The control is so interlocked that the motor can-



Supercalender as seen from drive side.



300 h.p. motor drive of new supercalender.



Supercalender control panel is described in detail.

not operate unless the arm locking pin, the unwind clutch, and the rewind clutch, are all disengaged. The final adjustment for securing or releasing the arm locking pin has to be made by manually turning a hand wheel.

Removal and placement of paper rolls from the reel arms is accomplished by means of a floor controlled two motor electric hoist, with 10,000 lb. capacity, manufactured by the Harnischfeger Corp.

Excess steam from the showers is removed from the room by a size 35 Buffalo industrial exhauster. The suction ducts are located 1) below the rear platform, opposite the fourth nip from the bottom of the stack, and 2) at each end of the top roll.

Calender Power

The supercalender is powered by a Reliance 300 h.p. 250 volt direct current motor diriving through a Falk parallel shaft reducer, which in turn is coupled to the bottom roll of the stack (see Figure 3).

Tension on the unwind web is provided by a Reliance 30/40 h.p. adjustable speed direct current motor.

Power for the supercalender and for controlling the wind and the unwind equipment is provided by a 250 KW, 440 V, 25 cycle, 750 r.p.m. synchronous motor-generator set which also mounts a 230 volt constant voltage exciter, which provides the necessary excitation to both the field and control circuits.

A small auxiliary motor generator set, driven by a Reliance 25 h.p. squirrel cage induction motor includes a low voltage Buck-Boost generator used in conjunction with the unwind equipment, a low voltage booster generator used in conjunction with the windup equipment, and a multiple field Reliance VSQ control generator used with the basic super calender drive. Power for the electronic equipment is 440 volt, 1 phase, 62.5 cycles.

Controls for the calender, wind and unwind units are mounted in a Nema 1 Floor Type Cabinet, located in the control room.

The operator's controls are mounted on a pinnacle type bench board which also includes the supercalender pressure loading devices. This arrangement provides a conveniently centralized operator's station allowing complete control of the supercalender, the wind and the unwind units and the pressure loading at one point.

The basic supercalender drive is speed regulated, utilizing a Reliance type VSR electronic regulator operating in conjunction with a Reliance VSQ Multi-Feld control generator. Speed is accurately regulated, regardless of load, throughout the speed range from a threading speed of 20 f.p.m. to a maximum speed of 1800 f.p.m. The stack can be operated continuously at any point throughout this range.

Acceleration and deceleration are on a timed linear rate with current limit override in either direction. These rates are adjustable to suit local operating conditions. In addition, an accelerated fast stopping rate is provided to bring the equipment to rest quickly in the event of sheet break or other operating conditions which may necessitate use of this feature.

Unique Drive

The unique feature of the supercalender drive is its contactorless armature loop circuit. The armature leads between the supercalender generator and the motor are continuous. This circuit is not broken by a contactor or circuit breaker. The calender ammeter shunt and overload are mounted in a separate Nema 1, wall type panel, conveniently located in the armature loop circuit. This arrangement eliminates cable and conduit runs back to the main control panel, allowing considerable time and cost savings during installation.

Contactorless armature loop circuits of this type require controlling circuits which provide and maintain continuous regulation over the main generator output. In this case, such control is provided through a Reliance VSQ Mul i-Field generator and associated circuits which actually "suicide" the generator out-put voltage to bring smooth stoppage and to hold the equipment at rest. Contactorless control of the supercalender also provides extremely smooth starting and stopping for jogging and threading operations, and saves considerable space by eliminating the use of a large contactor on the main control panel. Smoother jogging results in the elimination of sheet breaks during threading operations, since there is no tendency for the calender to "jump".

Speed Adjustment Feature

When the calender is in operation, the speed is controlled through a high gain VSR electronic regulator. This unit regulates speed by comparing the voltage of the tachometer, mounted on the calender motor, to the reference controlled by the operator. Accurate speed regulation is thus ensured regardless of load. This feature is always used in conjunction with the VSQ Multi-Field type control generator, which provides fail-safe features and the suiciding effect for stoppage. The fail-safe features include fast stopping of the stack in the event of failure of power or any of the controlling devices. These features are inherent in the sys-

tem through the always present VSQ secondary current limit circuit.

The stack drive incorporates the basic functions of jog, thread, run-slow, run, normal stop and emergency stop. The associated push-buttons are grouped for convenience on the operator's benchboard. An ammeter provides visual indication of calender load and a speed indicator clearly gives a visual indication of line speed at any time.

The wind and unwind equipment, when energized, operate with the supercalender maintaining selected tension on their selective webs. The unwind is provided with a thread arrangement to assist the operator in bringing a narrow tail from the stack, by paying off paper from the roll during the threading operation. As soon as the sheet has widened out to the point where tension may be applied, the operator controls it through a selector switch on the benchboard and a rheostat to the desired web tension.

The ammeter provided gives the operator a visual indication of tension since there is a direct relationship between the indication of armature current and a tension on the web. It is then maintained automatically over the complete speed range of the supercalender.

The windup thread arrangement operates in a manner similar to the unwind. After a web has been established between the calender and the windup, the operator adjusts the web tension. Here again, the tension is maintained during all normal operations automatically. Speed regulation of the stack by the use of the speed regulator provides a stable threading speed which is extremely desirable for feeding the narrow tail through the stack.

As the windup and unwind rolls change diameter, the respective drive automatically compensates for the change in linear speed and torque necessary to maintain the selected tension on its web. This is accomplished on both the windup and the unwind through a VSR regulator of the same type used for speed controlling the supercalender. The regulators in this case of course, are used to maintain web tension rather than to control speeds. Duplication of regulating equipment is thus provided regardless of function.

Booster generators are used in conjunction with the windup and unwind. They provide power for stalled tension since the stack may be brought to rest with a web of paper maintained continuously from the unwind through the stack to the windup. As long as the windup and unwind tension selector switches are in the "tension" position, these drives will act to maintain the selected tension on the web even at standstill.

Also tied to the drive are interlocking auxiliary functions which automatically control the doctor blade oscillation, steam showers, stock unloading, and automatic stoppage. These auxiliary functions are important as they relieve the operator of incidental duties and allow more time for observing the finish of the sheet.

The pinnacle benchboard gives complete metering, pushbutton and selector switch operation of all the equipment used for driving the supercalender.

Control Desk

The control desk top is 24 by 42 in. An 8 in. wide instrument panel makes the overall width of the control desk 32 in., and the overall height is 50 in. The operating edge of the table is 36 in. and the rear 41 in. above the floor.

Panel instruments indicate: Unwind d.c. amperes, with a scale of 300-0-300; Calender d.c. amperes, scale 1500-0-1500; Line Speed f.p.m., scale 0-2000; and the Winder d.c. amperes, scale 150-0-150. The three dials at the back of the operating table control, through the VS unit, the unwind tension, the calender speed and winder tension. If these are not readjusted after a paper break, the calender will automatically accelerate (after the run-fast button is depressed) to the running speed the calender had been operating prior to the break.

The pistol grip at the left in Figure 4 transfers the unwind control to the threading circuit. Threading speed is adjusted by the adjacent rheostat. In a similar manner the left pistol grip transfers the winder motor to the threading circuit and the adjacent rheostat adjusts the speed. Markings for pistol grip switches are: ON—THREAD—and OFF.

The small button at the lower left corner (Figure 4) controls the oscillating doctor circuit, either off or automatic. Doctors automatically oscillate when the calender rolls are turning. From top to bottom, the row of five buttons are 1) Jog, stack runs slowly when button is depressed. 2) Reset. After stack has been stopped this button must be depressed before operating circuits are energized. 3) A Red Light. Indicates lubricating oil pump is running. 4) Start, and 5) Stop Buttons, which control lubricating pump motor. Next row, top button 6) runs stack at threading speed. 7) A 1-¾ in. diameter red button, set slightly above the other controls, is used to stop the stack in normal operations. 8) A red light, which indicates oil pressure on the hydraulic roll pressure system. Lamps 3) and 8) are automatically lighted when calender thread or run button is used. 9) Hand control for steam showers, marked: HAND—OFF—AUTOMATIC.

The next row to the right 10) is Run Slow and 11) is Run Fast. Below 10) is a 3 in. diameter red button 12), which is the Emergency Stop. Depression of this button applies instantaneous dynamic braking. 13) is the automatic steam shower control, which is brought into use when 9) is switched to automatic. 14) is Shower Steam—OFF. The small lever at the far right is a hand control to raise and lower the rolls. The adjacent button is a safety device designed to prevent an accidental turning of oil pressure to raise rolls while the stack is operating.

A Foxboro indicating and recording pressure guage is located at each side of the control panel base. These record pressure on each end of the calender rolls. Pressure is hand adjusted using bypass valves just below the guages.

Emergency stop is also effected by paper roll failure, which closes an electric eye circuit. This tends to reduce damage by releasing pressure on the rolls and by quickly stopping the stack. A reversing switch in unwind reel motor circuit permits twice through operation without turning the sheet.

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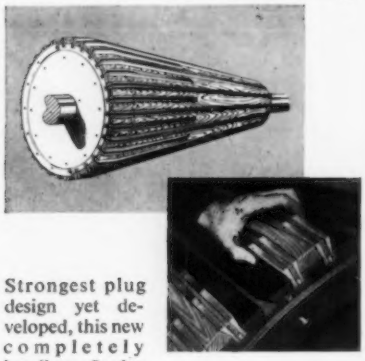

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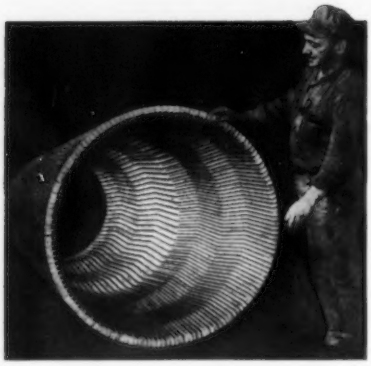

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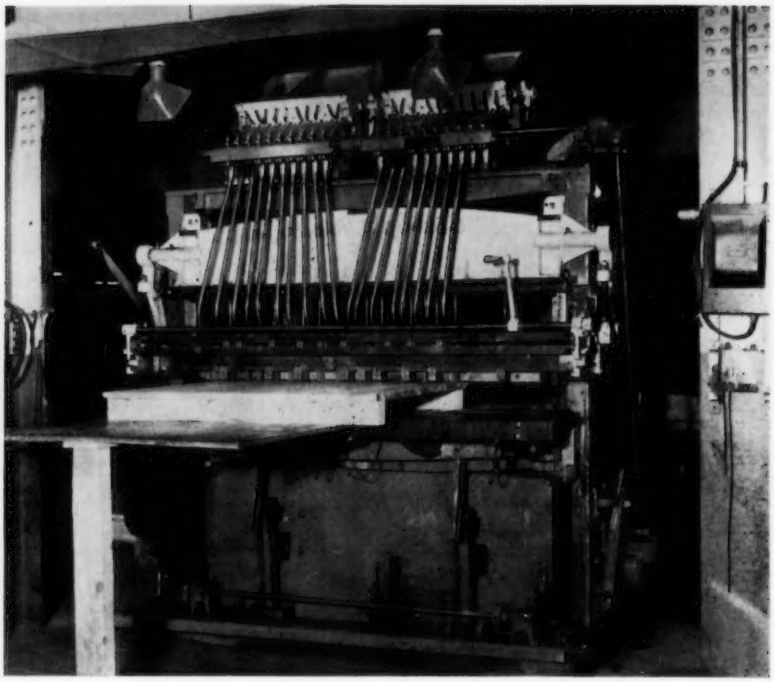


Automatic Nailer Makes Skids at Mechanicville

A new multiple nailing machine, the latest in equipment of this kind, is now in operation in the box shop of the Mechanicville, N. Y. mill of West Virginia Pulp and Paper Co.

Especially adaptable for work in this department with 8 to 6 penny nails, the machine can also handle any size from 6 to 16, twenty at a time, by changing over the nail feed discs. The mechanical unit is powered by 10 h.p. motor.

The nails themselves are tossed in hoppers, and mechanically aligned point first. When the machine is actuated, nails are fed to the chucks. On the second and all succeeding strokes, a nail is driven, and another nail is fed to replace the original.

The machine also performs a nail-clinching operation (turning the nails point into the wood). A box 70 in. in width can pass through the space set for nailing. The machine was installed by the Morgan Machine Co., Inc. of Rochester, N. Y.

A central oiling system for lubricating main transmission bearings, and a positive guard on the main transmission unit which protects operator and machine at all times, are other features.

John Tashjian of West Virginia's supervisory staff is in charge of the new nailing machine which has maximum use here in making skids and cases and pallets in connection with the company's Merchant Paper Sales Division which is headquartered in Mechanicville, N. Y.

This division, which has been actively underway since early this year, handles paper production which eventually is sold through wholesale merchant firms. The new nailing machine plays an important part in this program which often requires minimum production time for orders, sometimes as close as 24 hours. Skids are often made on as little as one-half hour's notice.

Covers latest equipment, processes, and methods . . .

Revised and Enlarged THIRD EDITION

Modern Pulp and Paper Making

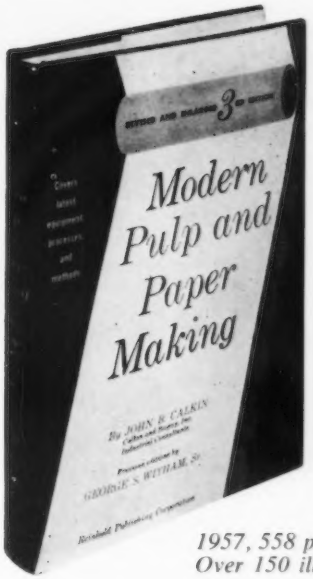
Revised and edited by

JOHN B. CALKIN

Calkin and Bayley, Inc.
Industrial Consultants

Previous editions by

GEORGE S. WITHAM, Sr.



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INDEX

Encompasses in a single volume the fundamental principles of modern pulp and paper making. The present work, a complete revision of the widely used editions by George S. Witham, has been entirely rewritten by 13 outstanding authorities. The result is a basic guide for practical paper makers; for young men in the industry who need ready assistance in the mill; and for technical men not actually in the pulp and paper industry, but who need to know the salient facts.

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About the Editor

JOHN B. CALKIN'S 38 years in the paper industry eminently qualify him to edit and help write this new edition. He is President of Calkin and Bayley, Inc., Industrial Consultants. He has been active in many professional organizations; is the author of numerous technical articles; and has contributed to several outstanding books.

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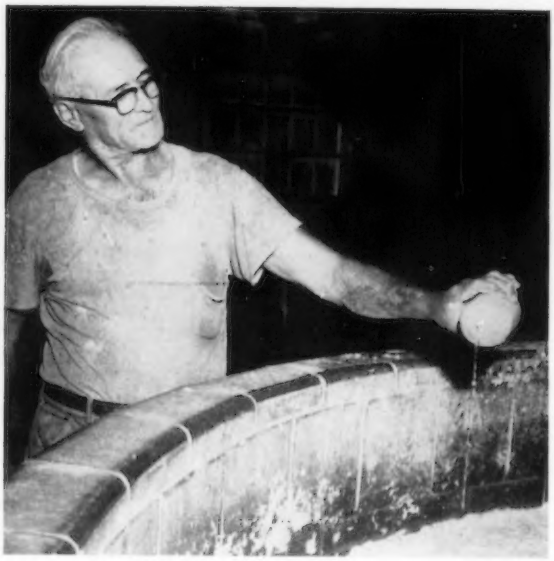
Canadian and New England Mills Make Full-Scale Trials of . . .

A New Slime Control Agent



William J. Connolly
Market Research and Development Engineer,
Metal & Thermit Corporation

Under actual operations in both newsprint and boxboard production, a recently developed organo-tin compound . . . bis tri-n-butyl tin oxide* . . . has demonstrated its effectiveness in controlling slime caused by micro-organisms in paper mill water systems.

This new compound is less toxic to humans than the conventional type of slime control agents and correspondingly minimize the hazard to handlers. Nor will bis tri-n-butyl tin oxide show measurable corrosive effect on the wire or metal parts which other toxicants tend to corrode.

In contrast to commonly used agents which are limited in effectiveness by acidity variations, the new organo-tin compound performs efficiently under all pH conditions. It is easy to handle, and eliminates need to make solutions. Users simply add the chemical oxide as a concentrated material.

Attacks the Nerves

An important factor in the effectiveness of this new compound is its unique method of attack on bacteria and fungi.

Agents of the conventional type used in slime control are believed to attack micro-organisms through the digestive tract. Experience shows that when so attacked, these organisms may build up a tolerance for the chemicals used. Pulp and paper mill operators, therefore, attempt to prevent development of such immunity by dosing mill system waters with one toxicant for a few days, and then with another, alternately.

Advent of the new organo-tin compound makes the practice of alternate dosage obsolete, because it is believed to attack slime producing micro-organisms through their nervous systems. Even after protracted trials of this new agent, neither fungi nor bacteria have manifested a build-up of tolerance because the biocidal action is apparently neural involvement.

Development

Commercial development of bis tri-n-butyl tin oxide by Metal & Thermit Corp. proceeded from early investigations conducted in the Institute of Organic Chemistry at Utrecht, Holland. There, research indicated very high fungicidal activity of organotin compounds of the $R_3Sn\ X$ series, in which R represents an organic radical linked to the tin atom by a tin-carbon bond, and X denotes an organic or inorganic radical not attached by a tin-carbon bond. One particular structural type, incorporating a total of between 9 and 12 carbon atoms attached to the tin atoms, exhibited maximum activity.

Chemists at the Metal & Thermit Corp. laboratories not only confirmed the European investigations but also narrowed the search to the tributyl tin series as logical choice for slime control.

The tributyl tins meet three major needs. Primarily, these compounds comprise the 9 to 12 carbon atom structure which renders maximum attack against micro-organisms. Secondly, tributyl tins prove less toxic to humans than methyl or ethyl tin compounds and thus reduce handling hazards.

Efficiency of bis tri-n-butyl tin oxide can be seen from Table I. This shows concentrations (parts per million) needed to completely inhibit growth of the tabulated organisms commonly found in pulp and paper mill water systems.

Canadian Mill Experience

Slime trouble that increased boxboard manufacturing cost induced a Canadian operator to attempt control by using bis tri-n-butyl tin oxide throughout his mill. This plant also produces newsprint, but the operator's immediate problem involved slime control in the boxboard mill.

Heretofore, the Canadian mill used

*Bis tri-n-butyl tin oxide is available from Metal & Thermit Corporation under the registered trade mark TBTO.

a 10 percent solution of phenylmercuric acetate as toxicant in attempts to control slime during the processing of boxboard. The mercurial compound was also used in newsprint production. At this plant, scrap paper and virgin pulp are mixed prior to being processed into the board. The operator adds his slime control agent in the chests with the pulp. During past years, conventional agents were made into a solution, and the solution was measured into these tanks. In initiating the trial of this new slime control agent, it was added in the same chests on a slug basis every eight hours. To keep the material cost equal to that of the mercury solution which it replaced, no more than nine pounds of the concentrated chemical was added in the tanks each 24 hours. After the first week of these additions, the system was found completely devoid of any slime.

During the second week of trial, the addition rate was reduced to five pounds per 24 hour period. Again results indicated that the daily rate could be reduced. Accordingly, only one pound was added each eight hours during the third week. Yet even this low rate afforded satisfactory control of the slime.

At the end of the three-week test, the mill returned to the use of phenylmercuric acetate to afford a basis of comparison. With the conventional agent in use, slime again accumulated, resulting in unsatisfactory operating conditions. Naturally, the operator returned to use of bis tri-n-butyl tin oxide in his board mill. Recently the company introduced it in an adjacent mill which produces 200 tons of newsprint per day.

The effectiveness of bis tri-n-butyl tin oxide as a slime control agent reduces the danger of breaks, and in addition to saving the time and effort expended on other types that must be diluted, the new organo-tin compound saves on material cost because a smaller amount keeps the mill system clean.

New England Mill's Experience

Its economy in this respect was recently shown at a New England paper mill. Output from this plant includes machine finished paper and super calendered stocks, as well as printing papers and grades for converting. The mill uses a relatively closed water system that incorporates a recovery installation and utilizes a high percentage of recirculation. Quantities of water going to waste just about equal the supply of fresh water introduced through a set of cleaning showers over the wire. Dried pulp goes into the finish.

In the past, chlorinated phenol served as toxicant. A single pound of this chemical, dissolved in a barrel, provided a dilute solution which was introduced hourly. An easier method of adding the slime control agent followed introduction of bis tri-n-butyl tin oxide. This new agent, delivered in drums, is aspirated from these containers into bottles, so that each bottle contains one proper dosage. Mill men now simply empty the bottles into the beater chest at the start of each shift.

The slime control agent goes into the first beater chest, which supplies stock for three beaters. After passing through the jordans and refiners, it arrives in the second chest and finally to the machines. Consistency going through the jordans is about four percent and range from 0.75 percent to 1.00 percent at the wire.

TABLE I—BIOSTATIC VALUES

Concentration (p.p.m.) causing complete inhibition of growth of the organism.

Aerobacter aerogenes	1.0
Bacillus mycoides	0.1
Bacillus subtilis	1.0
Xanthomonas vesicatoria	1.0
Aspergillus niger	0.3
Penicillium expansum	0.05
Alternaria oleraceae	0.1

Use of the new agent was initiated with 150 c.c. slugs per eight hour shift. On an equal cost basis, this amount was equivalent to the conventional agent which it replaced. Effectiveness of the new material exceeded that of the old. Experience showed the feasibility of a lesser quantity. As a result, the amount is now reduced to 125 c.c. and the corresponding cost reduction has reached 16 2/3 percent.

Thus, the mill not only keeps the water system clean, but does so at less cost than heretofore.

One of the characteristics which makes bis tri-n-butyl tin oxide especially beneficial in pulp and paper mill operation is its tendency to adhere to surfaces. In effect, this inhibits accumulations of slime that otherwise gather on walls and floors of tanks, pipes, etc. Less time and effort is required for routine clean up. Furthermore, with no slime deposits, there are no globs to break off and spot or cause breaks in the paper.

A final advantage, is that this chemical serves as a preservative; it protects both pulp and finished paper against mildew. Its protective action, for example, salvages the high percentage of mildewed "lap" formerly discarded after shipment.

Effects of Wood Barking and Storage on Pitch in Sulphite Pulp

Ch. Gustafsson, S. Kahila and T. Lindh

Finnish Pulp and Paper Research Institute, Helsinki, Finland

A study was made of the influence of storage on land and in water of spruce wood, in a clean barked, half-clean barked, strip-barked, and unbarked condition, on the amounts of pitch deposited on a copper surface from sulphite pulp cooked from the wood. It was established that considerably more pitch is deposited from pulp cooked from wood which has been stored in water than is the case with pulp cooked from wood stored for a corresponding period of time on land. On the basis of the results obtained, it appears that from the point of view of the pitch troubles barking of the wood is of no appreciable significance.

The experiments carried out in order to determine the influence of successive storage on land and in water did not give any completely clear answer to the question as to the lengths of the periods of time the wood should previously be stored on land in order that the pulps cooked from it should not give rise to pitch troubles after storage in water for seven months. It could, however, be stated that storage of the wood for about six months on land seems to be sufficient to prevent an increase in the amount of pitch deposited on a metal surface from pulp cooked from the wood which has undergone a seven-month storage in water.

If the wood is first immersed in water for seven months, and is then brought on to the land, a storage for about twelve months on land is necessary before the amounts of deposited pitch are of the same magnitude as after storage on land for a corresponding period of time (seven months).

Summarized from an article appearing in the May, 1957 issue of the Finnish Paper and Timber Journal.

CALCULATING PERCENTAGES (with a slide rule) in plotting a probability graph.

PLOTTING RESULTS on control chart at the wet end of the paper machine.

How the Quality Control Program Operates at KVP

Robert C. Paris

Supervisor of Quality Control, KVP Co., Kalamazoo, Mich.

The methods used to insure that manufacturing departments are kept acquainted at all times with the quality of their raw materials and the quality of their product out-put are presented.

The purpose of the quality control program at KVP is to keep the manufacturing departments informed of their quality level at all times so that they may produce a uniform quality product at a profit for the company. Through this informative process, we strive to make machine adjustments and corrections before a reject is made thus giving a greater production of acceptable quality product. However, when the quality does slip below the acceptable level, the product is flagged and disposition must be made by the designated people.

Robert C. Paris

Statistical Methods

We decided to use the data accumulated by our paper testers for a period of one year to compute our control and acceptance limits. The main reason for picking a period of a year was to include the seasonal variations which were known to exist.

Next we decided to use probability paper as the statistical method by which we would obtain our limits. The principle advantage of this method is that large amounts of data can be handled easily. Also with no further calculations the average and an estimate of the

standard deviation can be obtained. In the case of skewed (non-normal) distributions, limits from probability paper are much more reliable than other methods. In addition, the graph can be kept as a permanent record for easy reference. We choose two sigma limits for control limits which when exceeded require corrective action. We also have acceptance limits which when exceeded require special classification of the product. Since there is little published on the use of probability paper, it seems that a brief explanation of this method should be presented.

The first step in making a probability graph is to make a frequency distribution on the data.

A frequency distribution is simply a count of the number of test values falling within certain ranges of the test values. These various ranges of test values are called cells. We should choose a range (cell) such that about ten ranges or cells will include all of our data. The lower limit of our range is called the lower cell boundary, the upper limit of our range is called the upper cell boundary, and the half way point of our range is called the cell mid-point.

Suppose that we wish to make a frequency distribution of the Sheffield smoothness of paper. A quick visual check of the data in Table I shows that our lowest value is 81 and our highest value is 120. From this we can see that a range or cell of five (5) Sheffield units will give us 9 cells and include all of the data. Next we record the lower cell boundaries (ie. 80, 85, 90, etc.), then read off our data test by test and make a mark after each cell which includes the observed test value. See Table II. The use of the lower cell boundary rather than the cell mid-point is less cumbersome and gives identical results. We must keep in mind that we are dealing with the lower cell boundary rather than the mid-point when plotting our data on probability graph paper.

All tests falling between 80 and 84 would belong to the cell with a lower cell boundary of 80, those tests between 85 and 89 would belong to cell 85, etc. Actually cell 80 has a lower cell boundary of 80, an upper cell boundary of 84 and a cell mid-point of 82.

The next calculation is shown in Table III. For convenience, 50 values were used. A slide rule is used to calculate percentages and by using both per cent under and over, we avoid the larger numbers, and work on the most accurate section of the slide rule. Beginning with our lowest cell, we accumulate the frequency of tests under each cell until we have accumulated about one half of our values. The frequency of tests under cell 80 is 0, under cell 85 is 2, under cell 90 is 5(2+3), and under cell 95 is 22(5+17). Next we start at the highest cell and accumulate the frequency of tests over each cell. The frequency of tests over cell 120 is 1, over cell 115 is 2(1+1), over cell 110 is 3(2+1) over cell 105 is 4(3+1), and over cell 100 is 11(4+7).

The accumulated frequencies (under and over) are divided by the total number of test and multiplied by 100 to obtain the percentage under and over. (In all cases under or over refers to the lower cell boundary.) The next step is to plot these percentages on

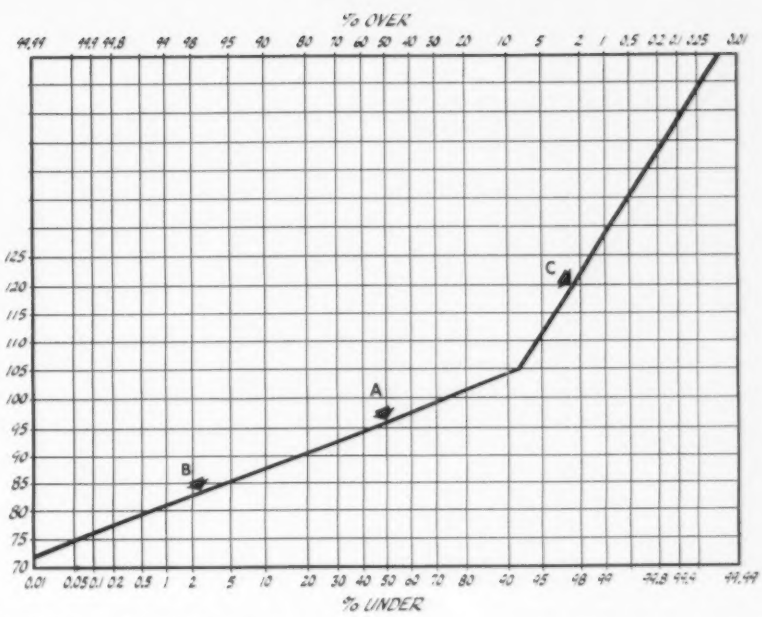


FIGURE I—Probability graph.

TABLE I—LIST OF 50 CONSECUTIVE VALUES OF SHEFFIELD SMOOTHNESS

93	98	98	90	99
103	100	97	91	99
84	103	98	97	93
92	90	94	89	115
95	94	98	90	109
90	91	98	96	97
103	90	88	93	114
103	96	97	95	81
120	92	97	97	90
100	91	101	93	89

TABLE II—CELL BOUNDARIES AND TEST DATA

Lower Cell Boundary	Number of times observed test value falls within cell
80	//
85	///
90	//// ///
95	//// ////
100	//// //
105	/
110	/
115	/
120	/

TABLE III—CALCULATION OF PERCENTAGES UNDER AND OVER

Lower Cell Boundary	Frequency	Under		Over	
		Frequency	Per Cent	Frequency	Per Cent
80	2	0			
85	3	2	4		
90	17	5	10		
95	17	22	44		
100	7			11	22
105	1			4	8
110	1			3	6
115	1			2	4
120	1			1	2

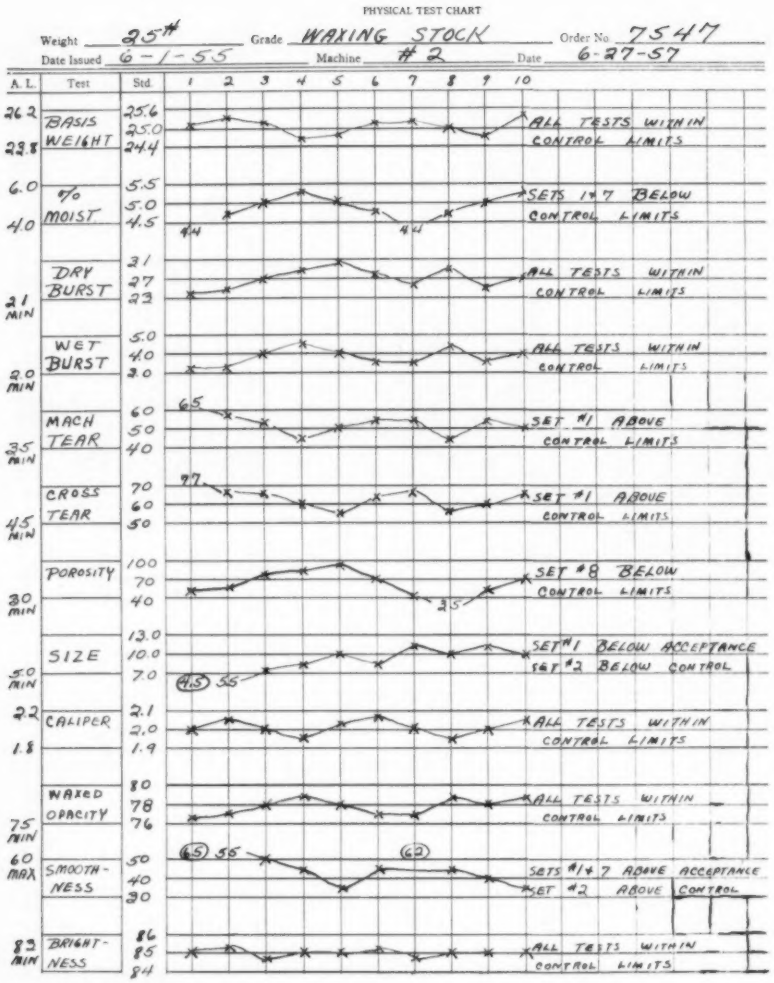


FIGURE 2—Sample physical test chart.

probability graph paper as shown in Figure I. We can see from Figure I that our distribution is not normal, in fact, it is skewed to the high side. A normal distribution plotted on probability paper will give a straight line. Point A on the graph shows the average to be 96 which is quite close to the arithmetic average of 96.22 of the values in Table I.

We obtain our two sigma control limits (the range which would include 95% of our test values) at points B and C. Point B is our lower control limit which is 83.5 and point C is our upper control limit which is 120. As long as our process is operating without variation due to an assignable cause, 19 out of 20 tests will fall within our control limits, and only one time in 20 would we expect a test outside these limits due to chance alone.

It is interesting to compare the control limits obtained by the moving range and standard deviation methods with those obtained from probability paper. This comparison is shown below.

Method Used	2 Sigma Control Limits
Probability Paper	83.5-120
Moving Range	84.1-108.3
Standard Deviation	81.7-110.7

Neither the moving range nor standard deviation will include 95 per cent of the test values, since they are based on normal distribution and cannot take care of the high values when the distribution is skewed. Calculations for moving range and standard deviation are shown in the appendix.

The transition from statistical calculations to the installation of the limits on production machines should be very slow. We began at first with limits on just one grade to acquaint the personnel with the new system. We slowly expanded the number of grades until limits had been established on all grades and had become accepted by production personnel.

We began this in one department and when this one department had been completed, we began over again in the next department in the same manner until all major departments had been covered.

One problem which arose was how to have control charts for up to 13 different tests on a graph paper that were not too bulky to handle and to process through a duplicating machine. Figure 2 shows a sample chart which solved this problem. One of these charts is typed up with the limits for each grade and kept on file in the laboratory as the master copy. Copies are made by the ozalid process. In using these charts, if the test is within control limits, the tester marks an "X", estimating the distance the test is from standard. If the test is below control, the figures are written in just below the lower control limits, and if above control, the figures are written in just above the upper control limit. If either of these are also outside acceptance limits, the figures are circled in red pencil. Thus, the machine operator can tell at a glance the quality he is producing.

The education of the operators in the use of control charts is done by the foremen and supervisors. These foremen and supervisors have been trained both at in plant sessions on quality control, and at evening courses at a local college. The education of the people using quality control is perhaps the most important phase of the program.

Acceptance and Rejection of Material

In all phases of production, material which passes quality control tests is accepted for filling customers' orders. Production which does not pass our acceptance limits is tagged and held in a special classification for disposition. These rolls are reported to the manager of manufacturing. Either the manager of manufacturing or a person delegated by him decides on the disposition of the rejected paper. Based on what particular test is in question, the roll may be placed in a limited use category where the particular test is not critical, it may be put into job lots, into seconds, or sent back to the beater. Many times the sales department or the technical department may be called upon for advice in making the decision for disposition.

The quality control group is one division of the technical department. This group, located in the research laboratory, keeps a check on the total product produced for each department and also their per cent rejects. They make a monthly report to the vice-president of manufacturing of these

rejects, and in addition point out any trouble spots where improvement can be made.

It might be well to point out at this time that some of the assignable causes for being outside control limits in paper making are those which require long term corrections. Pulp furnishes, which depend on the market, inventory, etc. is one example of this. The monthly reports help in determining if the assignable cause is due to a long term type correction.

Another function of the laboratory quality control group is the examination of complaints. The importance of this function lies in the evaluation of our acceptance limits as related to complaints. It also allows a comparison of complaints with the rejections made in the various departments.

Color Control

The major difference between our quality control in the printing department and the other departments is that in printing we are dealing with attributes rather than variables. That is, the properties are measured by judgment rather than numerical results from an instrument. For each item printed, color folders are made up showing a light tolerance, a standard, and a dark tolerance. These folders are submitted by the sales department to the customer for his approval.

In setting up a quality control program in printing, we found that the light source under which color was judged was a very important factor. A balanced lighting system, using a mixture of fluorescent and tungsten lights with a diffusing screen, was combined in a light booth and established as the standard light source for judging colors. All checks for color match and depth are made in this booth. Booths are also used by the pressmen and the men in the ink lab. making color matches. The artists who make up the designs, and all offices of people having anything to do with the judging of color are also equipped with balanced lighting.

Each printed roll is inspected for color depth, color match coverage, register, toning, scratches, show-ups, etc. Arbitrary numbers are assigned for minor, major, and critical defects. Rolls having critical defects are tagged, and disposition is made in a similar manner as described above.

Raw Materials

The laboratory quality control group examines all major raw materials and recommends whether a shipment should be accepted or rejected. This group works closely with the purchasing agent through whom copies of reports on raw materials are sent to the supplier. In this way the supplier is kept informed of our test results, and can make corrections on his process before our acceptance limits are exceeded. It is only natural that the raw material must be kept in control, in order to maintain control of the process in which they will be used.

Our quality control program, through the use of statistical limits, the dissimination of quality information, and control of raw materials provides a vital service to the manufacturing department in helping them to produce uniform quality products at a profit to our company.

PRINTING QUALITY control inspector judging color in the light booth.

HAND WAXING paper sample in preparation for checking the blocking point and sealing strength of a wax shipment.

Appendix—Calculation of Moving Range

The difference between the first value and the second value is recorded, the difference between the second and third value is noted, between the third and fourth value, etc. This is called the moving range (2). The average moving range is determined and multiplied by the appropriate value found in the tables on page 115 of reference 2. These factors are given for three sigma limits. In order to obtain two sigma limits, two-thirds of this factor was used. The average moving range of the figures in Table I is 6.816.

Calculation of the Standard Deviation

The standard deviation of the values in Table I were calculated using the formula (3)

$$\text{Standard Deviation (a)} = \sqrt{\frac{(X_1-X)^2 + (X_2-X)^2 + (X_3-X)^2 + (X_n-X)^2}{n}}$$

and was found to be 7.25.

References

(1) Throw New Light on Color, **Paper Film and Foil Converter,** May 1957, pg. 28

(2) ASTM Manual on Quality Control of Materials, January 1951, pages 78 and 115

(3) Statistical Quality Control, E. L. Grant, McGraw Hill Book Co., Inc., 1952, pg. 52

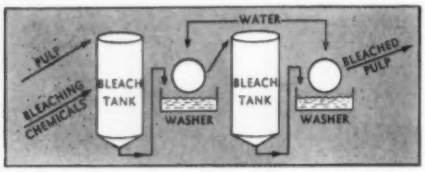
for Effective Removal of

Residual Chlorine!

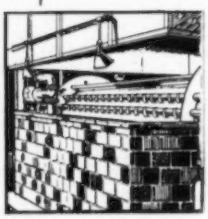
TC TENNESSEE CORPORATION

LIQUID SULFUR DIOXIDE HIGHEST QUALITY SO_2

Tennessee's liquid Sulfur Dioxide is a most efficient and economical antichlor. Removes residual chlorine and other materials which cause color reversion or yellowing with age. It also eliminates excessive residual chlorine in water.



Available In:
- CYLINDERS
- TON DRUMS
- TANK TRUCKS
- TANK CARS

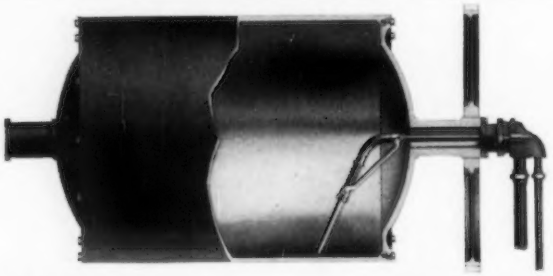


Tennessee's Liquid Sulfur Dioxide practically 100% pure, is also very effective as a reducing, bleaching, and neutralizing agent, preservative and pH control.

We would like to consult with you on the possibilities of Tennessee's Liquid Sulfur Dioxide in your processing.

TENNESSEE TC CORPORATION

617-29 Grant Building, Atlanta, Georgia



ENGINEERED TO STAY PUT

The Midwest Auto-flex Syphon features a spring and brace that holds the end of the pipe at the proper distance from the bottom of the dryer. The pipe cannot possibly take any other position —hence, proper water and air removal.

The cantilever leverage exerted is less than half that exerted by bent pipe syphons. In the Midwest, the pipe clears the dryer and creates no drag on the journal. Fits all steam joints and remains effective at low as well as at high operating speeds.

Order a few for trial and quit worrying about syphon troubles.

ROSS MIDWEST FULTON CORP., Dayton, Ohio, U.S.A.

Subsidiary of J. O. Ross Engineering Corp., New York, N. Y.

Representatives:

James Brinkley, Seattle; Clark & Vicario, North Tarrytown, N. Y.;

Ross Engineering of Canada Limited, Montreal.

PRICES OF MATERIALS

Aluminum sulphate:			
coml. bulk, c.l. wks.	cwt.	$1.85	/ 2.05
iron-free, c.l. wks.	cwt.	3.55	/ —
Casein, acid prec.:			
dom. sh. pt. c.l. (30 mesh)	cwt.	56.00	/ —
Arg. ex. dock, duty paid	cwt.	24.50	/25.50
New Zealand, do.	cwt.	27.50	/28.00
Caustic soda:			
c.l. wks. solid, 76%	cwt.	4.30	/ —
flak. & grd. drums, c.l.	cwt.	4.70	/ —
liquid 50% tanks		2.90	/ 3.00
liquid 73% tanks		3.00	/ 3.10
China Clay			
dom., dry-grd., airfloat:			
325 mesh bgs., c.l. Geo.	ton	10.00	/ —
300 mesh, bgs., c.l. Geo.	ton	13.50	/14.50
imp., white, lump, c.l. ex. dock		20.00	/35.00
Chlorine:			
single-unit tanks, works	cwt.	3.15	/ —
multiple unit, 2-5 cars per yr.		5.25	/ 4.05
Formaldehyde:			
37% (inh. 8% methanol) USP:			
drums, c.l. dlvd.	lb.	.0715/	—
tank-cars dlvd	lb.	.045	/ —
Lime:			
hydrated, bulk, c.l. N.Y.	ton	22.32	/ —
quicklime, bulk, c.l. N.Y.	ton	20.82	/ —
Gum rosin:			
K, M, N, drums, c.l. Savan,	cwt.	7.45	/ 7.55
Rosin size:			
70%, gum & pale paste, tank cars, south, sh. pt.	cwt.	7.44	/ 7.48
Saltcake:			
dom. bulk, 100% anh. wks.	ton	28.00	/ —
Soda ash:			
light, 58% ash bags, wks.	cwt.	1.90	/ —
bulk, c.l. wks	cwt.	1.60	/ —
Sodium peroxide:			
dms., c.l. E. of Miss.	lb.	.20½/	—
l.c.l. (same basis)		.21	/ .21½
Sodium silicate, 40° Be.:			
tank-cars, wks.	cwt.	1.20	/ —
drums, c.l. wks.	cwt.	1.55	/ —
47° Be. WW.			
tank-cars, c.l. wks.	cwt.	1.90	/ —
drums, c.l. wks.	cwt.	2.25	/ —
Soybean, protein:			
chem. isol., wks. c.l. bags	lb.	.23	/ —
Starches:			
corn, multiwalls, c.l. prod. plant:			
pearl	cwt.	6.49	/ 6.75
white, dextrins	cwt.	8.08	/ 8.20
chlorinated	cwt.	8.25	/ 8.35
potato, Idaho, c.l. wks.	cwt.	6.50	/ —
East, fr. all. 50 cents cwt.			
potato, Maine, f.o.b. wks.	cwt.	6.25	/ —
Sulphuric acid:			
60° Be. cbys. c.l. wks.	cwt.	2.00	/ —
l.c.l. wks.	cwt.	2.45	/ —
tank-cars, wks.	ton	18.60	/ —
Sulphur:			
crude, c.l. mines, contract,	long ton	26.50	/ —
f.o.b. vessels Gulf dock	ton	28.00	/ —
Sulphur dioxide:			
liquid, coml. cyl., wks.	lb.	.10	/ .12
multi-unit cars, wks.	lb.	.0535/	—
Talc, fibrous grd., bags:			
c.l. wks., N.Y.	ton	28.00	/ —
l.c.l. wks., N.Y.	ton	31.00	/36.00
Titanium dioxide:			
anstase, c.l. dlvd. E. bags.	lb.	.25½/	—
l.c.l. dlvd.	lb.	.26½/	—
rutile, c.l. dlvd.	lb.	.27½/	—
l.c.l. dlvd.	lb.	.28½/	—

PRICES OF FIBERS

MARKET WOOD PULP

SECOND QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 90.00	$82.50/ 90.00	§$83.00/ 86.00§	§$92.00/ —	§$77.50/ 90.00
Kraft, Blchd.	152.00/155.00	155.00/ —	§155.00/ —		§155.00/ —
Kraft, Blchd. Hdwd.	150.00/ —		§137.00/ —		
Kraft, Semi-bleached	140.00/ —	135.00/140.00	§135.00/140.00§	*137.50/142.50	
Kraft, Unbl.	117.50/125.00	120.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	150.00/ —	150.00/ —	*150.00/ —	*150.00/ —	145.00/147.50†
Sulphite, Unblchd.	130.00/ —	130.00/ —	†130.50/ —	*130.00/ —	
Sulphite, Unb'l. Gl'sn		129.00/ —	†129.00/ —		
Soda, Blchd.	142.50/145.00	145.00/ —			

§ On Dock Atlantic Ports. * Freight allowed. † Varying Freight Allowances

NEW YORK RAG MARKET

New Domestic Cotton Cuttings
Delivered Mill Basis
PRICES NOMINAL

	Per 100 lbs.
No. 1 White Shirts	$13.50/$14.00
No. 1 Unblchd. Muslins	16.00/ 16.75
Blchd. & Unblchd. Underwears	15.00/ 15.50
No. 1 Light Silesias	7.00/ 7.50
No. 1 Light Blue Overalls	7.25/ 8.00
Percales	6.00/ 6.50
No. 1 Light Prints	5.00/ 5.50
Suntan Khakis	5.50/ 6.25
Cottonades	3.25/ 3.75
No. 1 Washables	2.50/ 2.75

Old Domestic Cotton Rags

(Prices to Dealers, f.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$3.00/$3.25
Cotton Pants & Overalls	2.00/ 2.25
Twos and Blues, Repacked	1.50/ 1.75
No. 2 Roofing	.60/ .70

COTTON LINTERS

Memphis Market
f.o.b. Oilmills

Week Ended July 29		Per 100 lbs.
Grade 1	n.a.	
2	1 cut—felting	$9.50/ $9.25
3		9.25/ 8.50
4		8.25/ 7.50
5		7.50/ 7.00
6		6.50/ 6.00
7		6.00/ 5.75

*Based on 73% cellulose.

Old Rope & Bagging

(Prices to Dealers, f.o.b. N.Y.)

	Per 100 lbs.
New Burlap Cuts	$5.75/$6.50
Scrap Burlap	4.50/ 5.25
Australian Wool Pouches	5.25/ 5.75
Gunny	5.50/ 6.25
No. 1 Domestic Manila Rope	7.75/ 8.25
No. 1 Foreign Manila Rope	6.25/ 6.50
Domestic Sisal Strings	4.25/ 4.50

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	July 29	July 29	July 29	July 29
No. 1 Mixed Paper	$4.00/ 6.00	5.00/ 7.00	4.00/ —	12.00/ —
No. 1 News	10.00/ 12.00	11.00/ —	12.00/ —	11.00/ —
Overissue News (Lg. size)	13.00/ 16.00	9.00/ 12.00	17.00/ —	13.00/ —
Mill Wrappers	12.00/ 14.00	11.00/ 12.00	7.00/ —	13.00/ —
Old Corrugated Containers	18.00/ 19.00	15.00/ 16.00	22.00/ —	18.00/ —
Super Resorted Kraft Paper	30.00/ 35.00	35.00/ 36.00	30.00/ —	45.00/ —
New Double Kr. Ld. Corr. Cuts (Semi-chem. medium)	25.00/ 30.00 40.00/ 45.00	32.00/ 35.00 40.00/ 45.00	35.50/ — 40.00/ 45.00	30.00/ — 40.00/ 45.00
New 100% Kraft Corr. Cuts	50.00/ 55.00	50.00/ 55.00	55.00/ —	40.00/ —
New Br. Kraft, Env. Cuts	65.00/ 75.00	75.00/ 80.00	55.00/ —	45.00/ 50.00
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	60.00/ 65.00	50.00/ —	45.00/ 50.00
New Br. Kr. Bag Waste Unprintd	60.00/ 65.00	70.00/ 75.00	65.00/ —	45.00/ 50.00
No. 1 Groundwood Shvs.	25.00/ 30.00	25.00/ 30.00	22.00/ —	25.00/ 30.00
White Newsblanks	50.00/ 55.00	45.00/ 55.00	40.00/ —	55.00/ —
No. 1 Soft White Shvs.	55.00/ 65.00	60.00/ 65.00	60.00/ —	— / —
Super Soft White Shvs.	65.00/ 70.00	70.00/ 75.00	70.00/ —	— / —
Hd. White Shvs.	90.00/ 95.00	100.00/105.00	85.00/ —	85.00/ 90.00
Hd. White Env. Cuts	110.00/120.00	115.00/125.00	95.00/ —	100.00/110.00
Col. Tab. Cards	45.00/ 50.00	50.00/ 57.00	47.50/ —	30.00/ —
Manila Tab. Cards	60.00/ 65.00	70.00/ 76.50	65.00/ —	49.00/ —
No. 1 Col. Ledger	30.00/ 32.00	30.00/ 35.00	40.00/ —	27.50/ —
White Ledger	50.00/ 55.00	50.00/ 55.00	55.00/ —	35.00/ 40.00
Mixed Book & Mag.†	18.00/ 20.00	19.00/ 20.00	12.00/ —	— / —
No. 1 Books‡	25.00/ 27.00	24.00/ 26.00	27.50/ —	— / —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

Abbey
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Trenton Ave. & Tucker St.
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Graders
of
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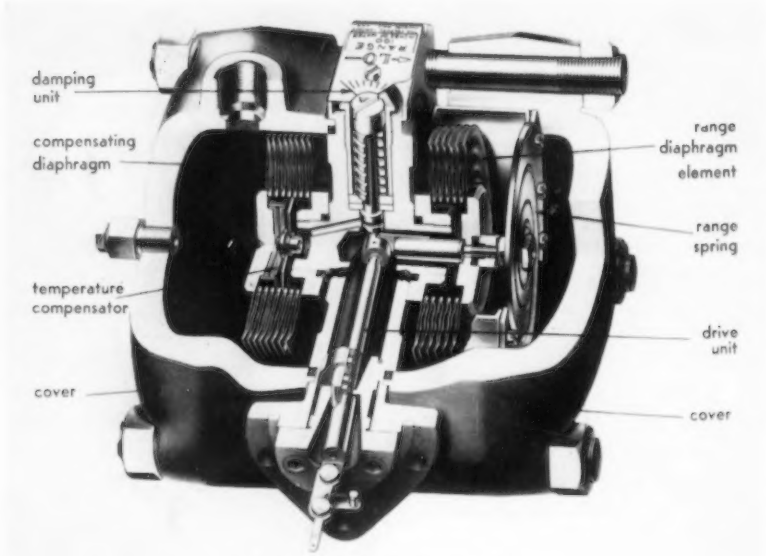
NEW EQUIPMENT AND SUPPLIES



Foxboro Type 37 Diaphragm Meter

Meter Features Unique Diaphragm Construction

Using preformed highly sensitive diaphragms, stacked to nest together for positive overrange protection to full static pressure, the new Type 37 diaphragm meter manufactured by Foxboro Co. for accurate flow measurement presents a new concept in mercuryless meter design.

Each pair of diaphragms forming the low pressure (range) and high pressure (compensating) diaphragm elements is welded at the outer circumference and to opposing faces of a series of spacing rings at the inner circumference. Overrange pressure on either element forces filling fluid through a connecting passage, around an adjustable damping plug and into the opposite element. The unit under pressure compresses so that the spacing rings form a metal-to-metal column and each pair of diaphragms is nested, preventing overrange damage.

Measurement is unaffected by temperature variation of the liquid in the elements. A bimetallic compensator inside the high pressure element varies the fluid capacity of the element according to temperature changes.

The low pressure element, working against a thermally stable range spring, is connected to a bellows-sealed drive arm which operates through an Elgiloy metal flexure to drive the indicating or recording mechanism.

Further information on the Type 37 Diaphragm Meter may be obtained from the Foxboro Co., Foxboro, Maine.

New Rotameter Floats

A new metering float design is said to provide interchangeability and predictability of performance in rotameters. Technical improvements in design permit one float to be used in any application from common flow indication to remote pneumatic or electric transmission or alarm functions. Complete adaptability to the most advanced types of instrumentation is reported.

For further information Bulletin 115 may be obtained from Brooks Rotameter Company, Lansdale, Pa.

New Solution Binder For Coatings

Known as Pliolite VT, this vinyl toluene/butadiene resin has been developed specifically as a solution binder for coatings by Goodyear Tire & Rubber Co., Akron, Ohio. Pliolite VT offers unusual chemical resistance, yet is soluble in low cost aliphatics such as mineral spirits. This copolymer resin goes into solution in solvents having Kauri Butanol values as low as 36.

The resin is of a thermoplastic nature and is odorless and tasteless. Films of unusual clarity, strength, hardness, and chemical resistence can be made from Pliolite VT. Currently under way in the Goodyear laboratories is intensive study in its use for paper coatings and adhesives.

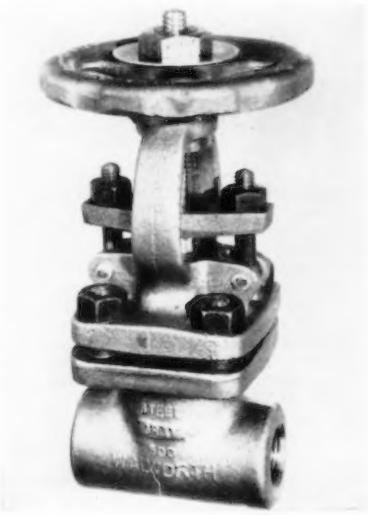
Further information on this resin is contained in Goodyear's bulletin Tech Book Facts on Pliolite VT Types and Properties.

Steel Wedge Gate Valve For High Temperature Use

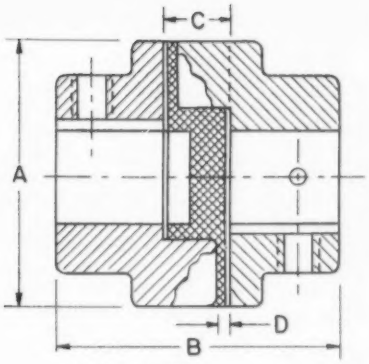
For water, steam, gas or air service at temperatures up to 850 deg. F. and for oil or oil vapor up to 1000 deg. F., a new line of 600-lb. steel wedge gate valves has been designed by Walworth Co., 60 E. 42nd St., New York, N. Y.

Valve body is of forged carbon steel. This valve has a non-shock pressure-temperature rating of 420 p.s.i. at 1000 deg. F. and a rating of 2000 p.s.i. at 100 deg. F. Stem, wedge and seat rings are made of 13 percent chromium stainless steel for longer service life. The wedge has a hardness of 500 Brinell and is accurately guided by ribs in the body.

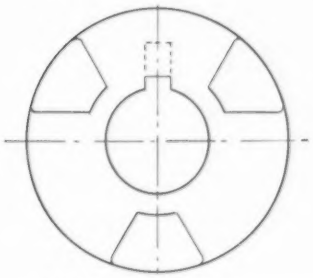
All valves in the new line are of the outside screw and yoke design. These valves are designed to permit repacking under pressure when fully opened. Repacking is made easy by the curved yoke arms and swing type eyebolts which provide free access to the stuffing box.



The valves are available with screwed or socket welding ends. Those with a union bonnet are available in eight sizes from ¼ to 2 in.; those with bolted bonnets, in six sizes from ½ to 2 in.



Side View, L-075



End View, L-075

Lightweight Aluminum Flexible Coupling

A new aluminum cast flexible coupling using a one-piece spider-type load cushion combines light weight, extra long service life and negligible maintenance. Special features of the coupling include:

1—The load is transferred entirely by cushion compression, thus eliminating wear and abrasion on the metal jaws.

2—Since only the load ends are under compression on non-reversing loads, the entire spider may be reversed for double service-life.

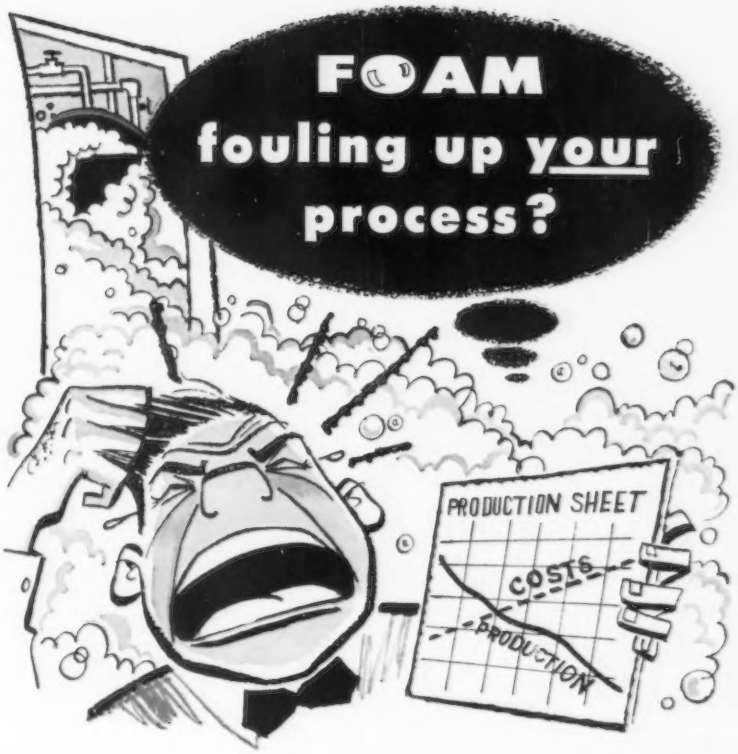
3—Cushions are plainly visible for quick inspection at all times.

4—Lubrication is never required.

Cushions are made from Buna-N, high grade oak tanned leather, Bakelite, or Bakelite–Buna-N combinations. Depending on the choice of cushioning materials, the coupling may be equipped for a variety of severe operating conditions including exposure to oils, chemicals, water, steam and abrasion. The body of the coupling consists of two precision aluminum castings. Total weight is approximately 1/3 lb.

Known as the L-075 flexible coupling, it is rated for loads of 1/10 hp. at 100 r.p.m. up to 2 hp. at 3600 r.p.m. Bore sizes range from ¼" to ⅞" (in 1/16" increments). Dimensions are 1¾" L.D. by 2⅛" over-all length.

It is manufactured by Lovejoy Flexible Coupling Co., 4999 W. Lake St., Chicago 44, Ill.



Get a Dow Corning Silicone Defoamer!

Whatever *your* foaming problem, there's a Dow Corning silicone defoamer that will help solve it at an amazingly low cost.

Just a teaspoonful of a Dow Corning silicone defoamer can prevent mountains of foam . . . enabling you to utilize *full* productive capacity and put your processing into high gear. What's more, when you eliminate foam, you say goodbye to wasteful boilovers and the fire hazards they may present.

ANTIFOAM B is the newest—and the lowest priced silicone defoamer available! Users report Antifoam B the easiest-to-use, most effective and most stable silicone defoamer ever developed. Water dilutable, ready for instant use, disperses immediately in aqueous solutions. Try it now at no expense!

FREE SAMPLE and INFORMATION—
To receive a generous trial sample of a Dow Corning Silicone Defoamer, return coupon below or write on your letterhead. No obligation, of course.

first in silicones

Dow Corning CORPORATION
MIDLAND, MICHIGAN

2920

NAME _____

TITLE _____

COMPANY _____

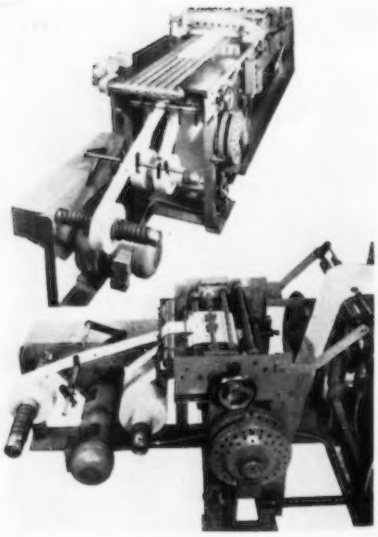
CITY _____ ZONE _____ STATE _____

My foamer is

Oil system _____

Aqueous system _____

Other _____



Versatile Multi-Converter

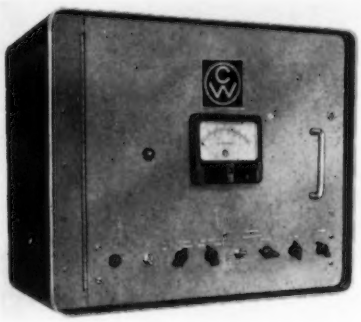
Built by Pearce Development Co. the four-impression Pearce Multi-Converter with Hobbs-Alquist rewind delivery, is shown in the top of the picture. At the bottom is shown the Hobbs-Alquist rewinder delivery with cut-off delivery table removed. The table assembly is designed for quick installation and removal to give additional flexibility.

This automatic machine is equipped with four printing heads, as well as with punching, die cutting, numbering and slitting attachments. The rewind delivery utilizes two Pearce pneumatic expansion shafts, powered by a Hobbs-Alquist rewinder motor, to rewind stock. Stock from the Multi-Converter is fed intermittently into a loop which is kept at constant size by means of an adjusting wheel on a Reeves Vari-Drive. The stock is then slit and removed. Tightness or hardness of the rewound roll is easily controlled by the large handwheel of the Hobbs-Alquist rewinder.

New Instruments Measure Paper Machine Speeds

The development of two new instruments for measuring draw speeds and linear speeds, which are of particular importance to the paper industry where precise control of draws can reduce the number of web breaks, increase production speeds, and permit accurate draw settings for running re-orders, has been announced by the Electronics Division of the Curtiss-Wright Corp., Carlstadt, N. J.

The first, the "draw speed gauge," measures with extreme accuracy the



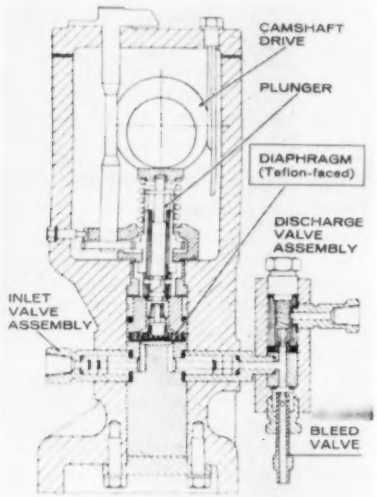
draw or extension of paper between rolls, and can operate with a continuous recorder—either circular or strip chart type—to provide a permanent record of the draw. Standard operating range of the draw speed gauge is 0 to 100 f.p.m. However, higher ranges of 0 to 150 f.p.m. or 0 to 200 f.p.m. are furnished for use with high speed machines where the draw may exceed 100 f.p.m.

By the addition of a reference frequency unit, the draw speed gauge can be converted to provide linear or rotational speeds of machine elements with an accuracy of 0.1 percent. Called the "linear speed gauge," its accuracy is obtained with a suppressed zero system which presents a limited speed range full scale on meter or recorder.

Both instruments employ magnetic pick-up heads and iron information gears for their sensing elements. The use of multiple pick-up heads and gears make it possible to check at a single station the various draws and speeds along the entire machine. There is said to be no problem of breakdown due to mechanical wear since there is no mechanical connection between the rolls and the instruments, nor any moving parts in the instruments themselves.

New Pump for Metering and Proportioning

A new packless diaphragm pump for proportioning and metering fluids has been developed by the Hills-McCanna Co., Chicago. Tested under actual operating conditions, this diaphragm pump

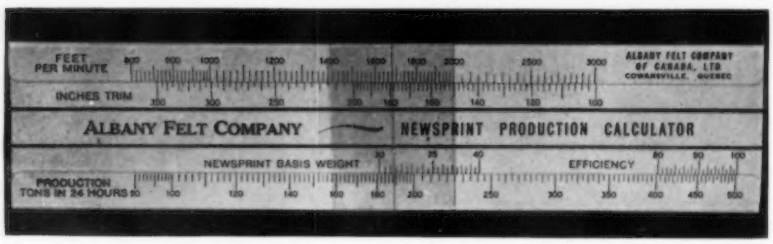


is reported to perform with exceptional accuracy and minimum maintenance at pressures up to 2500 p.s.i.

The diaphragm consists of solid Teflon permanently bonded to, and covering, the face of an elastomeric backing. This type of construction is claimed to assure long diaphragm life by combining the chemical resistance of Teflon with the flexibility of an elastomeric backing.

The new diaphragm pump was developed as an addition to the line of McCannameter pumps and incorporates features such as packless design, capsulated construction, minimum maintenance and smooth, continuous flow in a wide output range.

For complete information on the new packless Diaphragm McCannameter Pump, write to Hills-McCanna Co., 2358 W. Nelson Street, Chicago 18, Ill.

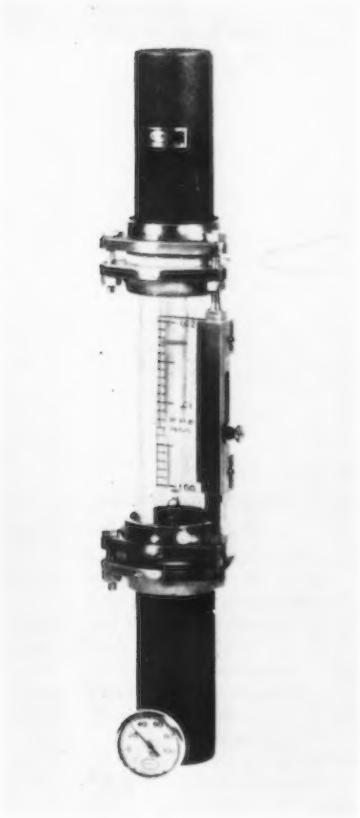


Production Calculator for Newsprint Machines

A new production calculator specifically designed for newsprint machines has been developed by the Albany Felt Co. The calculator is in the form of a slide rule. It will compute 1) production tons in a 24 hour period based on feet per minute, basis weight and inches trim, 2) production at a stated efficiency, and 3) efficiency (in percentage figures) of production. The calculator may be obtained free of charge by writing to Albany Felt Co., Albany, N. Y.

NEW

LITERATURE



New Instrument for Liquid Density Measurement

A new instrument, which provides direct, easy-to-read indication of liquid density of a continuously flowing process liquid, and which has a zero-set adjustment for original calibration under working conditions as well as a temperature adjustment that permits setting to existing fluid temperatures to provide a temperature corrected specific gravity reading, has recently been developed by Precision Thermometer & Instrument Co., 1434 Brandywine St., Philadelphia.

Liquid is passed continuously through the new Princo No. 745 Direct Indicating Model, and temperature corrected specific gravity readings are made directly without reference to charts or graphs, eliminating time-consuming, expensive, manual methods. The instrument, for use at temperatures to 220 deg. C, is available with ranges as small as .01 and as large as .50 specific gravity, and it can be used at pressures up to 125 p.s.i. Other specifications include: body of Pyrex pipe; trim (inlet and outlet fittings) of type 316 stainless steel or Hastelloy B or C; a Pyrex plummet; calibrating chain of platinum or tantalum; standard connections, ½" NPT female; bi-metallic dial thermometer.

ALPHA PIPE, FITTINGS AND VALVES. (Bulletin A-557) Contains flow charts, installation instructions, pipe characteristics and fields of application for both regular and high impact corrosion-resistant rigid polyvinyl chloride pipe. **Alpha Plastics Inc.**, 78 Okner Parkway, Livingston, N. J.

AEROVENT UTILITY FANS. (Bulletin 250-A) Describes and illustrates heavy-duty all-purpose units for spot cooling, drying or processing, with two, four or six blades. **Aerovent Fan Co., Inc.**, Piqua 55, Ohio.

CLARKSON FEEDERS. (Bulletin 575) Features their Model E in 18-8 stainless steel for controlled feeding of liquids with precision, dependability and low cost. **Clarkson Co.**, 564 Market St., San Francisco, Calif.

CARTHAGE HYDRAULIC LOG SPLITTER AND 47-INCH CHIPPER. (Bulletins 100-A and 47-2) Include illustrated sales copy, engineering drawings and specifications. **Carthage Machine Co.**, 571 West End Ave., Carthage, N. Y.

ELECTROHYDRAULIC VALVE ACTUATOR. (Application Bulletin 38.3) Contains description of this new actuator which is designed for use with low level a.c. or d.c. signals from electronic controllers and measuring elements, or remote positioning devices. **Askania Regulator Co.**, 240 E. Ontario St., Chicago 11, Ill.

HYSTER INDUSTRIAL TRUCKS AND ATTACHMENTS. (Condensed Guide) Covers complete line of basic truck models with working specifications for each truck. **Hyster Co.**, 2902 N.E. Clackamas St., Portland 8, Ore.

INDUSTRIAL TIRES AND WHEELS. (36p Guide Book) Explains all phases of industrial tire use and was written especially for maintenance superintendents, industrial engineers and purchasing agents. **B. F. Goodrich Tire Co.**, Akron, Ohio.

LARGER FLEXIDYNE DRIVES AND COUPLINGS. (Bulletins A654 and A-646A) Describes the larger size drive and coupling as well as providing engineering data, drawings and tables. The latter tells the story of Flexidyne on the first page and then provides illustrated sales copy on other products. **Dodge Mfg. Co.**, Mishawaka, Ind.

MOUNTAIN-SIDE LOGGING WITH LE TOURNEAU ELECTRIC ARCHES. (Brochure) Includes detailed information and on-the-job photos of their arches operating in the Pacific Northwest. **R. G. LeTourneau, Inc.**, 2399 S. MacArthur St., Longview, Tex.

PVC PIPE FITTINGS AND FLANGES. (Booklet) Provides technical data and installation information on unplasticized polyvinyl chloride pipe and fittings. **Tube Turns Plastics, Inc.**, 2929 Magazine St., Louisville 11, Ky.

THE 4-K AND 6-K EMERSON JORDANS. (Bulletins 4K and 6K-557) Illustrate and describe construction and performance features, besides showing capacities with various types of stock, speed and power ranges, dimensions and identification of all parts. **Emerson Mfg. Co., Div., John W. Bolton & Sons, Inc.**, Lawrence, Mass.

PLUG VALVE LUBRICANTS. (Reference Book 39—Sec. 5A) Gives lubricant recommendations for nearly 4,000 service conditions for which lubricated plug valves can be used. Also shows lubricated plug valve accessories. **Homestead Valve Mfg. Co.**, Corapolis, Pa.

HANDLING CHLORINE LIQUID AND GAS FROM CONTAINER TO DISPENSER. (Technical Bulletin WWC-3B4) Includes pertinent facts about chlorine, lists safety precautions, and outlines recommended practices for designing and construction chlorine supply systems. **Fischer & Porter Co.**, 230 Jacksonville Rd., Hatboro, Pa.

MANIFOLD TWO AND THREE WAY VALVES. (Bulletin 8351) Contains design and construction information. Also shows how a number of solenoid valves may be grouped on a common body thus eliminating separate pipe connections to each valve, when individually mounted. **Automatic Switch Co.**, Florham Park, N. J.

ONE MAN CREW. (Application Analysis-153) Tells how this system works and can be utilized, as well as its advantages. Also outlines the type of equipment required. **Lewis-Shepard Products, Inc.**, 125 Walnut, Watertown 72, Mass.

SOLVO PULPER FOR MEDIUM AND HIGH DENSITY PULPING. (Bulletin G4-1) Lists advantages and features of these pulpers which are constructed in a variety of materials to meet any pulp and paper mill requirement. **Improved Machinery, Inc.**, P. O. Box 503, Nashua, N. H.

SCHIELD BANTAM CRANE CARRIER-MOUNTED MODEL T-35. (Bulletin TCR-202) Features application and engineering data on seven and eight-ton carrier-mounted machines, as well as brief specifications and illustrations of Models 100, 200 and 300. **Schield Bantam Co.**, Park, Waverly, Iowa.

SYSTEMS ENGINEERING APPLIED TO COMBUSTION CONTROL. (Booklet 1 of a Series) Develops the reasons for and fundamentals of draft control. Also gives step-by-step exposition of the requirements and mechanics, and explains interlocked controls and safety devices. **Cleveland Fuel Equipment Co.**, 1111 Brookpark Rd., Cleveland 9, Ohio.

BROOKS SHO-RATE "150" ROTAMETER. (Bulletin 121) Gives complete specification, capacity and dimension data. **Brooks Rotameter Co.** P. O. Box 432-L, Lansdale, Pa.

NEWS OF ASSOCIATIONS

Dates Set for Northeastern Superintendents Meeting

Superintendents of the Northeastern Division of American Pulp and Paper Mill Superintendents Assn. will meet September 19-21 at Poland Spring House, Poland Spring, Maine, for their 37th Annual Fall Meeting.

Frank A. Knight, Eastern Corp., Bangor, Me., Division chairman, has reported that the technical program will be devoted to a "Symposium on the Use of Hardwoods," with six papers being presented. The titles of the papers with respective contributors follow: Utilization of Hardwoods at Champion-International, John Telford, Champion-International, Lawrence, Mass.; Usage of Hardwoods in Kraft Pulping, John H. Allan, Oxford Paper Co., Rumford, Me.; Ammonia-Base Hardwood Sulphite Pulp, Emerson Lewis, Eastern Corp., Lincoln, Me.; Operating Experience in a Neutral Sulphite Semi-Chemical Pulp Mill, Robert W. Doe, West Virginia Pulp & Paper Co., Mechanicville, N. Y.; Hardwood Utilization by the Chemigroundwood Process, Carl H. Reed, Great Northern Paper Co., Millinocket, Me.; Chemi-Mechanical Pulp, LeRoy Bauer, Bauer Brothers Co., Springfield, Ohio. A question and answer period will follow the presentation of the papers.

WRITE for prices and full details

SWEPCO FITTINGS, INC.

6 Clifton Boulevard, Clifton, New Jersey

Empire TAPPI Sets Advance Dates

July 24, 1957

In order to try to avoid conflicting dates on meetings of the various associations in the paper industry, the Empire State Section of TAPPI has set the following advance dates for its annual meeting:

1958—Whiteface Inn, Whiteface, N. Y.—June 12-13-14-15
1959—Whiteface Inn—June 11-12-13-14
1960—Whiteface Inn—June 9-10-11-12
1961—Whiteface Inn—June 8-9-10-11

We hope that you will publish these dates in your publication, Paper Trade Journal.

Very truly yours,
R. P. Sullivan
Secretary-Treasurer
Empire State Section, TAPPI

NPTA Announces Guest Speakers

Speakers at the semi-annual meeting of the National Paper Trade Assn., at the Conrad Hilton Hotel in Chicago on September 16-17-18 will include the Honorable John W. Bricker, U. S. Senator from Ohio, who will address the Open Industry Meeting, Tuesday morning, September 17.

The Wrapping Paper Division meeting during the afternoon of September 17, will have Guy McCorison, Vice president, Thilmany Pulp & Paper Co., G. Willing Pepper, vice president, Scott Paper Co., and George M. Rideout, vice president, Babson's Reports, Inc., as speakers.

On September 18 the Fine Paper Division meeting will hear George Olmsted, Jr., president, S. D. Warren Co., and Dilbur M. McFeely, vice president, Riegel Paper Corp.

Final Program For TAPPI Testing Conference

The eighth testing Conference sponsored by TAPPI will be held at the Hotel Shoreham, Washington, D.C., September 11 to 13.

The theme of this conference will be "Testing Instruments, Their Purpose and Uses." This will be the most comprehensive testing conference to date. A partial list of companies participating in the extensive instrument exhibit include:

Allegany Instrument Co., Ashton Valve Co., Brinkman Instrument Co., Custom Scientific Instrument Co., Hillside Laboratory, Hunter Associates Laboratory, Instron Engineering Corp., Kaydel Corp., Lord & Schoenberg, Manufacturers Engineering & Equipment Co., Scott Testers, Testing Machines, Inc., Thwing-Albert Instrument Co., Williams Apparatus Co.

The final program features the following:

Pulp, Paper and Board Testing, Moderator: M. Yezek, General Foods Corp., Battle Creek, Mich.

1—"The Ohio Boxboard Carton Opening Force Tester," by J. M. Kernan and Russell L. Lewis, Ohio Boxboard Co., Rittman, Ohio.

2—"A Study of Some Factor Which Effect the Stiffness of Paperboard," by Stan Trosset and William H. Aiken, Gardener Board and Paper Co., Middletown, Ohio.

3—"Progress Report on an Inter-Laboratory Study of Air Leak Smoothness Testers," by T. W. Lashof, National Bureau of Standards, Washington, D. C.

4—"Studies on the Permanganate Consumptions of Pulp Materials," by J. E. Tasman and V. Berzine, Pulp and Paper Research Institute of Canada, Montreal, Canada.

Optical Properties, Testing Instruments, moderator: D. Noal Obenshain, West Virginia Paper Co., Luke, Md.

1—"Improvement of TAPPI Method T480m-51, (75 deg. Gloss)," by R. S. Hunter, Hunter Associates Laboratory, Falls Church, Va.

2—"A Formation Standard," by C. J. Moen, Kimberly-Clark Corp., Neenah, Wis.

Precision of TAPPI Standard Testing Methods, moderator: A. R. Swing, Bemis Bros. Bag Co., Boston, Mass.

1—"Progress Report on the Activities of the Precision Committee," by C. A. Bicking, The Carborundum Co., Niagara Falls, N. Y.

2—"Precision of the TAPPI Standard Test Procedure T217m-48, Brightness of Pulp," by G. L. Maton, John I. Thompson Co., Washington, D. C.

3—"Precision of the TAPPI Standard Beater Test as Determined by Round Robin Tests on the TAPPI Reference Pulp," by C. C. Brandon, Howard Paper Mills, Dayton, Ohio.

Official Dinner, John C. Green, director of the Office of Technical Services, U.S. Dept. of Commerce, Washington, D. C. to be guest speaker.

General, Testing and Control, moderator: LaFayette Price, Government Printing Office, Washington, D. C.

1—"The Effect of Aging on the properties of Paperboard," by William H. Aiken, Gardner Board and Carton Co., Middletown, Ohio.

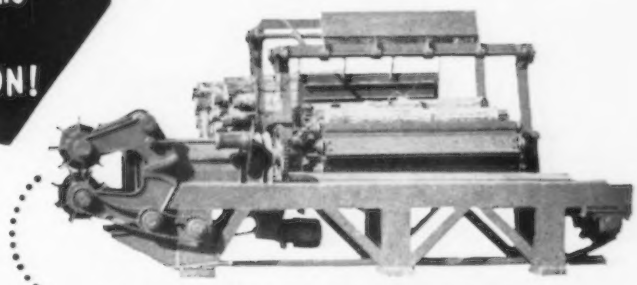
2—"Automatic Viscosity Control in the Graphic Arts Industry," by G. J. Rosenblit, Bendix Aviation Co., Cincinnati, Ohio.

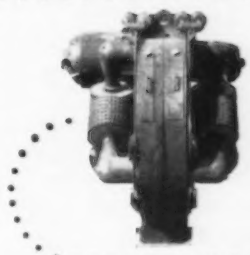
3—"Equilibrium Weight of Fibers Immersed in Water as a Method for Quick Consistence Determination," by David A. Fiegley, Armstrong Cork Co., Lancaster, Pa.

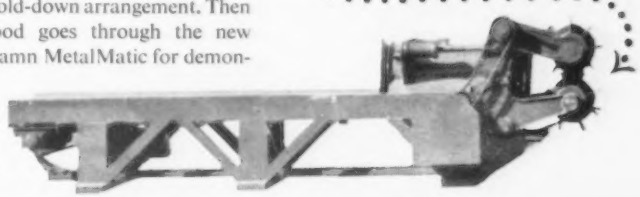
4—"A Test Method for Adhesion of Paraffin Wax to Milk Carton Stock," by R. H. Salvesen and M. K. Eosefow, Socony Mobil Oil Co., Brooklyn, N. Y.

See this Soderhamn Line IN ACTION!

New film available for showing in your own plant...







Here's the barking line that is exciting keen interest in the field today. See how the Pocket Chain Pulpwood Feeder delivers to the Soderhamn Infeed Chain Conveyor with hold-down arrangement for 4′ and 5′ 3″ pulpwood, through the fast 21″ Cambio Barker, and onto the Outfeed Chain Conveyor with same hold-down arrangement. Then pulpwood goes through the new Soderhamn MetalMatic for demonstration of its sensitive metal detecting, dye-marking and warning signal operation.

Ask for this demonstration film for showing in your own office. Can be shown on any 16 mm. projector.

Make Soderhamn your headquarters for Woodwaste Utilization Equipment

BARKERS • SLAB BARKERS & CHIPPERS
CHIP SCREENS • GANG SAWS
CONVEYORS • LOG FLIPPERS
AND MANY OTHER MACHINES

Call, wire or write for complete details

SODERHAMN MACHINE MANUFACTURING CO.
SODERHAMN, SWEDEN SINCE 1864 TALLADEGA, ALABAMA

West Coast Sales Office: Room 409 Pittock Building, Portland, Oregon
Canadian Representatives, East Coast: Forano Limited, Montreal, Canada

S. P. Allison

Ohio Boxboard Executive Re-Elected FBA Director

S. P. Allison, vice president in charge of the Ohio Boxboard Co.'s Container Division, has been re-elected a member of the Board of Directors of the Fibre Box Assn.

Mr. Allison joined Ohio Boxboard in 1945 as a member of the field sales staff in the Akron area. He was named manager of the company's corrugated sales in 1949 and general manager of the Container Division in 1953. He was elected a vice president in 1954.

St. Louis TAPPI To Meet Sept. 19

The St. Louis district of TAPPI will meet September 19 at the Le Chateau Restaurant, St. Louis, Mo., at 6:30 p.m. The guest speaker for the evening will be J. Homer Winkler of the Battelle Memorial Institute, Columbus, Ohio. Mr. Winkler's talk on "New Developments in the Graphic Arts." The presentation will include brief descriptions of a number of significant developments in the printing industries from which the trends in printing production can be identified.

This will be the fourth meeting of the young St. Louis district of TAPPI, which now has an active membership of 76. The chairman of the St. Louis chapter is J. J. Koenig of Gaylord Container Corp., a division of Crown Zellerbach Corp.

NEWS OF SUPPLIERS

P. Jordan

E. Gremier

Dodge Manufacturing Corp., Mishawaka, Ind. has appointed Paul Jordan director of engineering. He has been plant engineer since 1943, responsible for the company's buildings and equipment. He is credited with designing the new mechanized foundry at Dodge and has been a key figure in an extensive plant expansion and improvement program which is nearing completion in Mishawaka.

Pandia Division of Black-Clawson Co. has announced the appointment of Enrique Gremler to the newly created post of technical director for the Hamilton, Ohio, pulp mill equipment division.

Mr. Gremler is a 1947 graduate of Santa Maria University in Valparaiso, Chile, and later studied on scholarship at New York State College of Forestry, Syracuse, N. Y. He worked for Compania Manufacture de Papeles y Cartones as assistant to the technical director, and spent five years with W. R. Grace and Co. in Paramonga, Peru, as chief chemist. Prior to joining Black-Clawson, he was associated with the Fleetwood Chemical Co. of Webster, Mass., as technical director in the development of chemical products for the paper industry.

Elliott Co., Jeannette, Pa. has appointed H. J. Campbell as Kansas City district manager. He joined Elliott in 1943 and was originally assigned to the company's Chicago district office. He has been in its Kansas City office since 1948.

Chas R. Stevens, Inc., manufacturers of machinery and systems for paper mills and converters, has moved into a modern new plant and office building in Maumee, Ohio, a suburb of Toledo.

Productive capacity will be increased 400 percent over the company's former location in Toledo.

Dryden Bleached Sulphate Pulp Is in Production!

A year from now you will be glad you ordered a trial car today.

You will find Dryden's Northern Bleached Sulphate Pulp is equal in brightness, strength and cleanliness to the best European grades. Actual customers' tests have proved this repeatedly.

You will like the fact that all pulp is centri-cleaned and bleached with chlorine dioxide.

You will be assured of a dependable North American source of supply of quality pulp.

You will enjoy the stability of association with a member of the Anglo Group of Canadian Mills, one of Canada's largest and most experienced market pulp producers.

You will be getting the highest quality pulp for your money—we invite your comparison.

Dryden
Paper Company, Limited
Dryden, Ontario, Canada

NORTHEASTERN PAPER SALES, INC.
400 Madison Avenue,
New York 17, N. Y.

20 North Wacker Drive,
Chicago 6, Ill.

ANGLO PAPER PRODUCTS, LTD.
2055 Peel Street,
Montreal 2, Quebec

67 Yonge Street,
Toronto 1, Ontario

S. Gurley Jr.

V. Johnson

Olin Aluminum has appointed Sam Gurley Jr. vice president of sales. Mr. Gurley had been vice president—sales of H. K. Porter Co., Inc.

Olin Aluminum, the corporation's trade name for its aluminum, is currently being fabricated at four plants located in Chattanooga, Tenn.; East Alton, Ill.; Gulfport, Miss., and Riverside, Calif. Start-up of production next year at a huge fabrication plant now under construction in the Ohio River Valley will make Olin Mathieson one of the nation's four major aluminum fabricators.

Cameron Machine Co., Brooklyn, N. Y., has appointed Victor Johnson as sales representative in a newly organized territory which includes Illinois, Iowa, Mississippi, Missouri, Arkansas, Louisiana and Texas. He will make his headquarters in the Chicago area.

Mr. Johnson joined Cameron in 1951. He was manager of the service department and for the past two years has been the assistant to the general sales manager.

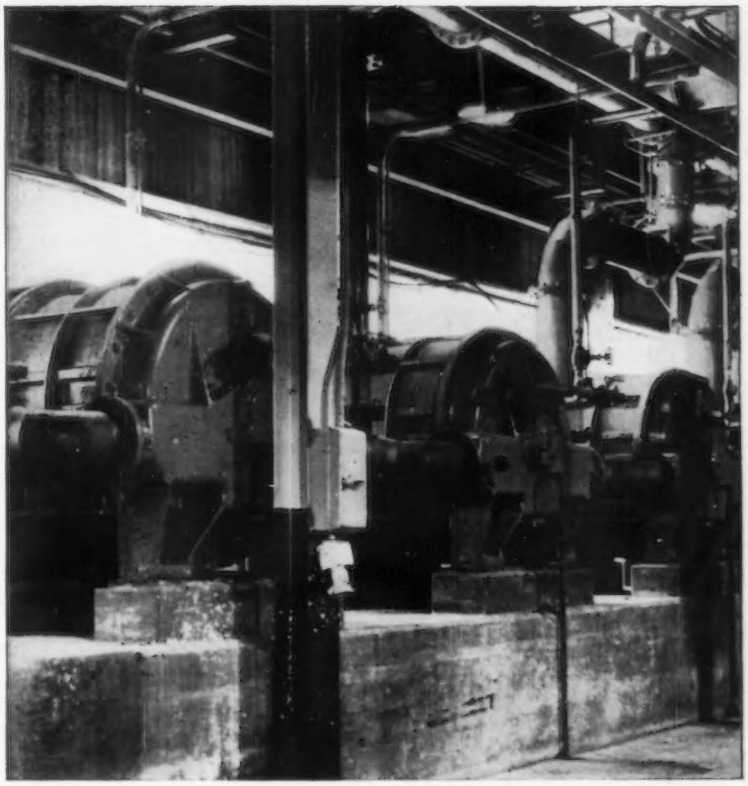
Morden Machines Co., Portland, Ore., announced recently that Millspaugh Ltd. of Sheffield, England, has been licensed to build and sell the Morden "Slush-Maker" pulper in Europe and the British Commonwealth (exclusive of Canada).

In 1946 Millspaugh was licensed in the same area to build the Morden "Stock-Maker" for beating.

Bristol Co. of Waterbury, Conn. has opened a new sales office in Portland, Ore. at 2210 N. W. Roosevelt Ave. It will be headquarters for Lyle R. Koroch, newly appointed sales engineer for the territory.

A. E. Stanley Manufacturing Co., Decatur, Ill. have announced the creation of a new research group for industrial products development. Named leader of the group is Dr. Leonard F. Barrington. He comes to the corn and soybean processing company from the Armour Research Foundation, Chicago.

What, actually, do Vacuum Pumps on paper machines handle?



Paper mill engineers know that it is actually a mixture of air and water vapor, but the custom of rating vacuum pumps in terms of air capacity alone causes this important fact to be frequently overlooked.

The presence of this water vapor causes a considerable reduction of the effective air handling capacity of any vacuum pump except the Nash. In the Nash Vacuum Pump the bulk of this water vapor is effectively condensed, due to the Nash operating principle. The air handling capacity of the Nash is therefore not reduced.

That is one of the reasons why Nash Vacuum Pumps are standard in over a thousand leading Paper Mills.

NASH ENGINEERING COMPANY

443 WILSON ROAD, SO. NORWALK, CONN.

OBITUARIES

Charles A. Wilder, 68, president and founder of Wilder Bros. Co., wholesalers and converters of paper, died July 22 in Philadelphia.

Mr. Wilder started as a paper manufacturing salesman and organized his own firm in 1914. He was a former officer of the Paper Trade Assn. of Philadelphia, and was a member of the National Paper Trade Assn. and the Philadelphia Paper and Cordage Assn.

Michael Dubin, 56, plant superintendent of the General Paper & Box Co., Philadelphia, Pa., died July 21 in Atlantic City, N. J.

William L. McGee, 79, credit manager with MacAndrews & Forbes Co., Camden, N. J. for 42 years, died July 18 in Philadelphia.

J. R. Hickman, 58, died July 18 of a heart attack in a Detroit, Mich. restaurant. He was district sales manager of the Ohio Paper Co., Miamisburg, Ohio for 20 years, and was on a business trip when he died.

Charles D. Branner, 74, died at Grandview hospital on July 18. He was a retired foreman at the Oxford Miami Paper Co., West Carrollton, Ohio, where he had been employed for 45 years.

Willard H. Gallop, 69, retired engineer for Sorg Paper Co., Middletown, Ohio, died July 18 at Middletown Hospital, where he was admitted the previous day for surgery. Although he had been in failing health two years, he suddenly become seriously ill earlier the week of July 15 following a visit to Warren, Ohio.

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Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

(Production as percent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

1957	June 22 91.1	June 29 91.6	July 6 51.0	July 13 76.0r	July 20 83.2
1956	June 23 99.6	June 30 99.1	July 7 63.7	July 14 88.8	June 21 96.1

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1957	93.9	96.5	96.3‡	93.0‡	93.6‡	92.5‡							
1956	99.6	102.6	102.9	102.5	101.8	99.9	85.6	96.7	94.3	99.5	97.6	90.9	97.9

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1950	1951	1952	1953	1954	1955	1956	1957
Year to Date	94.4	99.9	90.7	92.3	91.4	94.4	99.1	92.0
Year Average	95.8	98.0	88.6	92.3	91.6	94.9	97.9	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.
Note: In the above tables all the ratios shown are on the basis of a normal 6 and 7 day capacity.

PAPERBOARD OPERATING RATIOS†

COMPARATIVE WEEKLY SUMMARIES

1957	June 22 93	June 29 92	July 6 54	July 13 55	July 20 87
1956	June 23 97	June 30 97	July 7 56	July 14 70	July 21 89

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1957	91	94	94	92	93	91							
1956	100	100	99	100	99	98	77	95	89	96	93	84	94

† *Percents of operation based on "Inch-Hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING July 20, 1957	LAST WEEK ENDING July 13, 1957	CUMULATIVE TO DATE Jan. 1 to July 20, 1957
% Activity	87%	55%	90%
	Tons	*Tons*	*Tons*
Total Production	264,778	153,861	7,643,858
Liner	86,158	49,009	2,609,552
Corrugating Material	40,013	28,516	1,162,850
Chip & Filler Board	5,639	2,951	152,305
Total Containerboard	131,810	80,476	3,924,707
Folding	48,718	26,514	1,411,923
Set-Up	10,050	5,213	310,091
Special Food Board	24,438	17,015	686,461
Other	49,762	24,643	1,310,676
Total Boxboard	132,968	73,385	3,719,151
Total Orders	*Tons*	*Tons*	
Received	249,882	199,159	
Unfilled End of Week	464,699	488,517	

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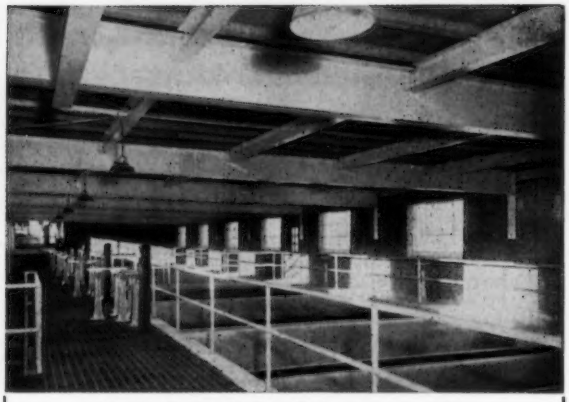

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Seybolds: 84" mill type (12Z), 64" Precision; 56", 50"—10Z; 84"—Daytons; 60", 44"—20th Century; 34"—Holyoke. Sheridan: 36" new model, Oswego: 44", 38" & 34", 54" heavy duty.

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1—50" 26-3A with C.T. & Elec. Eye
2—50" Type 40-4B for bandaging etc.
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1—84" Waldron Double-Drum, Shear-Cut, 50" Max. Rewind.
1—62" Johnstone Model 12 Score-cut
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2—24", 1—30" & 1—36" Kidder S.L. Shear cut

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1—40" Asphalt laminator
1—37" & 1—60" Hot Melt Coater & laminator
1—24" Waldron Reverse Coater
Schultz Automatic Roll machines, 12", 18" & 24" wide.
1—Knowlton Tube Winder with re-Cutter.
1—Beck Sheeter: 36" CCSH.
1—Dietz Twin Type Towel Interfolder
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A-12

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1—Waxing Machine, complete with Vilter Refrigeration Equipment and Drives.

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1—24" x 6' Lodge & Shipley Geared Head, Heavy Duty Machine Lathe, Taper Attachment, Hollow Spindle, Motorized.

1—16" Steptoe Shaper—Motorized.

1—B & S No. 2 Surface Grinder—Motorized. Gear Reducers, P.I.V. Drives, Gearmotors, B.B. Pumps, Etc. 1000 Electric Motors from ¼ H.P. to 600 H.P. in Stock.

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1—3 roll 84″ calender stack.
1—4 roll 72″ Calender Stack. (Extra heavy duty).
1—5 roll 82″ face.
1—5 roll 86″.

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24—Chipper Knives 15⅞ x 8¼, 2 slot.

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1—Dilts Classifiner, practically new.

CONVEYOR
1—Corrigan slush maker conveyor, 72″ wide.

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1—Jeffrey Hammermill (18″ dia. rotor).

CYLINDER MOLDS
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2—30″ diameter x 72″ face.
1—30″ diameter x 92″ face.
1—36″ diameter x 84″ face.
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DIGESTERS
1—Biggs 12′ 6″.
Write us regarding your requirements.

DRIVES
1—Rice-Barton hypoid enclosed drive, 4 to 1 ratio.
1—#6 Reeves horizontal—anti friction bearings, totally enclosed.
1—#6 Reeves vertical anti friction bearings, totally enclosed.
1—Sandy Hill right angle 50 H.P. (4.75 to 1)
1—Farrel Birmingham enclosed drive, 200 H.P. anti friction bearings, 5.45 to 1, new equipment.
1—Jones 21 H.P., ratio 10 to 1 (enclosed angle drive).
1—#4 Reeves Drive.
1—#4 Reeves Drive, totally enclosed, Class E, with 25 H.P. splash proof motor.
2—Waterbury Hydraulic Variable speed line shaft drives (from 40 to 100 H.P.).
3—Rice Barton enclosed drives, double reduction (14 to 1 one end, 4 to 1 other end).
1—Beloit hypoid enclosed drive 60 h.p. 5 to 1 ratio.

DRYERS
4—48″ dia. x 52″ face with frames, gears, bearings.
1—24″ diameter x 54″ face, with bearings (Steel).
4—28″ diameter x 80″ face with anti-friction bearing.
1—36″ diameter x 44″ face.
5—36″ diameter x 76″ face.
6—36″ diameter x 80″ face.
36—42″ diameter x 118″ face, complete.
22—28″ diameter x 40″ face with frames, gears and felt rolls.
1—16″ diameter x 54″ face (steel.)
1—48″ diameter x 66″ face.
1—60″ diameter x 89″ face, frames and bearings.
1—28″ diameter x 84″ face.
2—30″ diameter x 48″ face, with bearings.
2—30″ diameter x 40″ face, with bearings.
6—48″ diameter x 130″ face.
2—Cooling Drums, brass, 36″ x 128″, with frames, gears and necessary rolls to make up the unit.

DYNOFINER
"Rice Barton", retails on request.

EMBOSSING CALENDERS
1—43″ 3-Roll Embossing Calender.
1—45″ Meadows 2 roll embosser.
3—62″ 2 roll embossers.

EXTRACTOR ROLL
1—Extractor roll, 26″ diameter x 104″ face.
1—Rice Barton & Fales, Extractor Roll, 26″ diameter x 104″ face.

FELT CONDITIONER
Write us regarding your requirements.

FELT ROLLS
50—Brass Felt Rolls, with Brass Journals, 72″ face x 5″ dia.

FLAT SCREENS
1—8 Plate "Packer".
1—12 Plate "Packer".

GEARS
Write us regarding your requirements.

GRINDERS
2—3 pocket Grinders.

HYDRAFINER
1—Dilts, stainless steel filling, anti-friction bearings, excellent condition.

HYDRAULIC PRESS
1—750 ton hydraulic pulp press.

JORDANS
1—Noble & Wood mammoth.
Write us regarding your requirements.

KNIFE GRINDER
1—Rogers 128″ knife grinder.

LABORATORY EQUIPMENT
1—Ball Mill
1—Electric oven (Williams Standard Pulp Testing Apparatus)
1—2′ Shartle Hydrapulper.
1—36″ Somat Pulping Machine.
1—6″ x 6″ sheet mold.
1—Colloid mill.
1—8″ x 8″ sheet mold.
1—8″ x 8″ sheet dryer.
1—12″ x 12″ sheet dryer.
1—Schopper fold tester.

LAMINATING MACHINES
1—72″ Beloit laminator, complete with drive.
1—26″ Polyethylene laminator.
2—84″ Asphalt laminators.

MISCELLANEOUS
1—#1 Miami Selectrap.

MOTORS
2—100 h.p. G.E. Upright—1180 r.p.m.
1—300 h.p. Slip Ring Motor—500 r.p.m.—Rebuilt.

POPE REEL
Write us regarding your requirements.

PRESS ROLLS
2—Chilled iron, chrome plated 9″ x 72″.
2—Chilled iron, chrome plated 14″ x 74″
1—Chilled iron, chrome plated 12″ x 100″.
1—Chilled iron, chrome plated 10″ x 74″.
8—sets (1 rubber, 1 chrome steel) 74″ face x 15″ dia., complete with bearings.

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Various cone and assorted pulleys.

PULPERS
1—36″ Somat pulping machine.
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1—Shartle Bros. high density pump. 2000 g.p.m., 62 ft. head.
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1—Ingersoll Rand Fan Pump, 10,000 g.p.m.—25 ft. head, anti-friction bearings—like new.
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1—86″ 2 bowl reel.
1—84″ 3 bowl revolving reel.
1—100″ Rice Barton 2 bowl Reel, heavy duty.
1—123″—3 bowl Revolving Reel.
1—134″—2 drum.
1—72″ Dowingtown Reel, 2 bowl.

REFINERS
1—12″ Wiener Refiner.
1—#2 Claflin refiner.

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1—Bird Consistency Regulator.

ROLLS
Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)

ROTARY SCREENS
1—#1A Bird, copper vat.
2—APMEW Rotary Pulp Screens.

SAVEALLS
1—#5 Bird Saveall.

SCREENS PLATES
Bird Rotary screen plates.
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SHEETERS
1—124 Moore & White (duplex) sheeter, 4 pile layboy and 6 roll backstand.
1—140″ Hamblet (Simplex).
1—140″ Hamblet (Duplex).
1—150″ Hamblet duplex sheeter & layboy.
1—78″ Moore & White Co. Sheeter (Simplex), layboy and 6 roll backstand.
1—132″ Hamblet (Duplex) back stand and layboy, anti-friction bearings.

SHOWERS
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1—Taylor-Stiles paper shredder.

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3—42″ Cameron Type 6.
1—42″ Cameron Type 26-2A.
1—50″ Cameron Type 6.
1—62″ Cameron Type 6.
1—62″ Cameron Type 10-10.
1—72″ Cameron Type 10.
1—157″ Cameron Type 18.
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18—3″ Johnson steam joints (new).

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1—Morden Stock Maker (with motor).

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1—10 x 20 Shartle Triplex.
1—12 x 20 Shartle Triplex.
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1—Gould Centrifugal, 10″ x 8″, anti-friction bearings.

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Write us concerning your requirements.

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1—Downingtown suction couch shell only, 127½″ face x 26″ diameter.

SUCTION COUCH ROLLS
1—36″ diameter x 246″ face, SKF bearings.
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1—Sandusky Suction Couch Roll 108″ face x 24″ diameter, including spare shell.

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1—Beloit Rubber Covered Suction Felt Roll 109″ face x 20½″ diameter.

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Write us concerning your requirements.

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1—9 Roll 56″.

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2—72″ Hudson-Sharp (Surface type winder).

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1—150 kw General Electric.

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1—#6 Nash hytor.
1—L-4 Nash vacuum pump.
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1—K-4, motor equipped.
3—#1 Nash Hytor vacuum pumps.
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1—#4 Nash Hytor vacuum pump.
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1—72″ Wet Machine.

YANKEE DRYERS
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1—60″ diameter x 89″ face, frames and bearings.

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Machine will be in operation for another 3 months and could be inspected in operation.

Will sell any part of this machine.

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A-5

FOR SALE

COUCH ROLLS
7—18" dia. x 132" face R.C. couch rolls, 2" R.C., journals 2-15/16" dia., complete with bearings, arms, etc.

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1—Downingtown 24" dia. x 134" face bronze plain extractor roll.
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PRIMARY PRESS SECTION
4 Sets of primary press rolls, consisting of 4—12" dia., 4—14" dia., and 4—16" dia. x 128" face. Bottom rolls are cast iron with bronze jackets. Top rolls are R.C. These rolls are complete with bearings and Marshall drive.

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3 Sets of main presses, consisting of 2 stonite and 1 bronze jacketed 22" dia. x 129" face top press rolls in 3 R.C. 22" dia. x 128" face bottom press rolls. These press sections are complete with bearings, raising devices, frames, levers, 2 press roll doctors complete with oscillating drives. They are offered complete with 2 Falk right angle reduction gear drives rated at 22 H.P. each, ratio 9.09 to 1, complete with friction clutch, cone pulleys and belt guide.

CROWNLESS PRESS ROLL SECTION
1 Set of Black-Clawson 22" dia. x 128" face R.C. crownless deflectionless main press rolls, complete with A.F. brgs., framing, air cylinders & Foxboro control panel. This unit is offered complete with Philadelphia Gear Works right angle gear reducer rated at 100 HP, ratio 9.09 to 1, complete with friction clutch, cone pulleys and belt guide.

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5—Felt stretcher assemblies for use with above press sections, complete with cast iron stands and frames.

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Laminates foils, films, papers.
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Cypress 2-5703
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Equalizers, Doctor Rods, Metering Rods.
Rod sizes 1/8, 3/16, 1/4 and 5/16 dias.
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PAPER PULP MACHINES

1—152" Trim pulp drying machine. Head box stainless steel. Wire 164" x 80 ft. 18" breast roll. 25" suction couch. 6¼-7" table rolls. 5 suction boxes. 2-16" dandies. Beloit shake drive. 2 sets presses, rolls 24 x 158'. Felt conditioner. B & C enclosed drive 1st press. 1 dryer 26 x 160". 62 dryers 48 x 160". 2—48 x 160" pre heating dryers. Beloit duplex cutter. Lineshaft, prime mover. Pulp baling presses. Pump and spare parts. Production 190 tons/day pulp 7500#. Now operating.

2—88" Trim Fourdrinier paper machine. Speed 80-460. 3A Bird screen. Wire 102" x 65 ft. 22" suction couch, new 1941. 3 sets presses, Smooth press. 24 dryer 48 x 98". 2 stacks calenders. Reel. Cameron #18 winder 2100 FPM. Drives, line shaft, prime mover. 200 HP D.C. Reliance motor. Falk reducer rebuilt and rewound 1951. Beaters, chests, 9 pumps and spare parts. Grades Manilas, tag, Bristol, book drawing.

3—81" Trim 4 cylinder paperboard machine. Speed 50-225. Moulds 36 x 93" a.f. SKF. 18" diameter couches. C.I. end vats. 4 sets primary presses. 2 main and 1 smooth press. 32 dryers 36 x 87". 2 box frame calenders, 7 roll and 5 roll. Reel, winder, duplex cutter, variable and constant speed line shaft engine, beaters, Jordans and screens. Machine now operating.

4—81" Trim Fourdrinier pulp drying machine. Capacity 72 tons 500 lb. per day. Wire 104" x 80 ft. Suction couch. 3 presses 18 x 108". 34 dryers 48" diameter. Hamblet box frame cutter. Machine now operating.

5—72" Trim left hand Fourdrinier. Speed 450-750 ft. on weights 10-30. Wire 84" x 50 ft. Lip slice. Fourdrinier part rebuilt in 1939. Creping dryer 60 x 82". 20 x 80" suction press, a.f. Top roll 18 x 82". 20 dryers 48 x 80". Carrier ropes. 8 roll Beloit calender. Pope reel. 2 drum winder, drums 13 x 80", a.f. With variable speed motor drive. 3 Waterbury and 4 enclosed hypoid drives with prime mover. Also beaters, chests. Swen-Pederson Saveall. 10 pumps and spare parts. Now operating.

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Box 231, Cambridge 39, Massachusetts

Telephone—Trowbridge 6-0365

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FOR SALE

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FRANK H. DAVIS COMPANY INC.

BOX 231, CAMBRIDGE 39, MASSACHUSETTS

TELEPHONE—TROWBRIDGE 6-0365

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While we strive for accuracy in preparing the above index which is purely a service to our readers, we cannot be responsible for errors.

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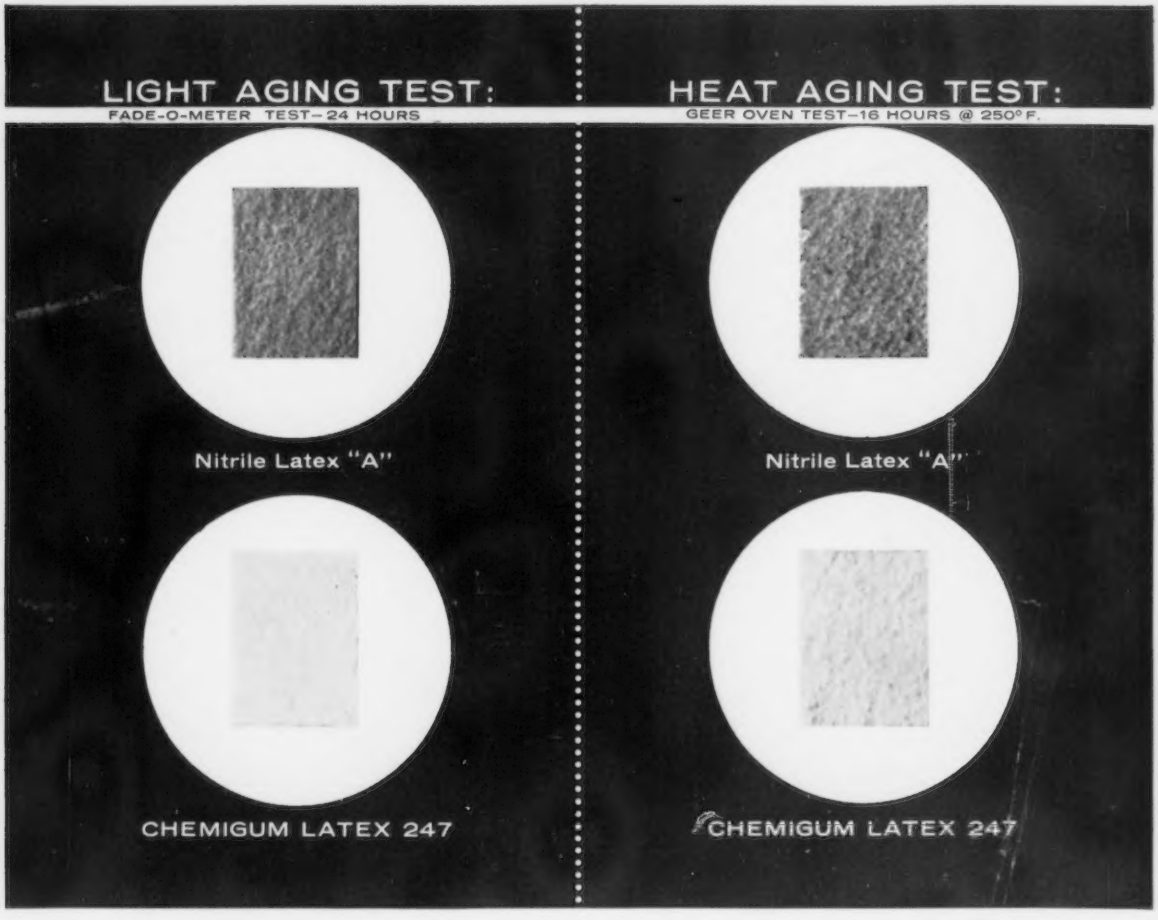

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